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ABSTRACT

This practicum was designed to increase the skills of 13 middle school students with learning and behavioral disabilities in the use of personal productivity software. In addition, teacher training and motivational activities were included. Consultation with the school technology instructor and creative scheduling provided the students with hours of training in the technology lab. Celebrations were held regularly and included presentation of awards and guest speakers. Lesson plans were developed that were designed to teach the students the basic functions of the word processing, multimedia, spreadsheet, and Internet functions of the software available on the computers in the school setting. Training was provided to the teacher to effectively plan for and supervise the students throughout the implementation period. Surveys as well as pretest and posttest data showed that the majority of students increased their knowledge of the available technology. The students were able to produce documents, spreadsheets, and multimedia presentations. The data showed that the students felt more competent to complete academic tasks after the training. The teacher also became more confident with integrating technology into the students' individualized education programs. Appendices include the lesson plans and evaluation results. (Contains 11 tables and 41 references.) (CR)

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ED 451 671

Design and Implementation of a Software Training Program for Students With Learning and Behavioral Disabilities

by
Robert Seferian
Cluster 90

A Praticum II Report Presented to
the Ed.D. Program in Child and Youth Studies
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

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Nova Southeastern University
2000

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Approval Page

This practicum took place as described.

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Norwalk, Connecticut
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July 19, 2000
Date

This practicum report was submitted by Robert Seferian under the direction of the adviser listed below. It was submitted to the Ed.D. Program in Child and Youth Studies and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

Approved:

10-24-00
Date of Final Approval of Report

Kathleen Kardaras, Ph.D., Adviser

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Abstract

Design and Implementation of a Software Training Program for Middle School Students with Learning and Behavioral Disabilities. Seferian, Robert, J., 2000: Practicum Report, Nova Southeastern University, Ed.D. Program in Child and Youth Studies. Technology Training/Special Education/Self-Help Skills/In-Service Training.

This practicum was designed to increase the skills of middle school students with learning and behavioral disabilities in the use of personal productivity software. In addition, teacher training and motivational activities were included. Consultation with the school technology instructor and creative scheduling provided the students with hours of training in the technology lab. Celebrations were held regularly and included presentations of awards and guest speakers.

The writer developed lesson plans designed to teach the students the basic functions of the word processing, multimedia, spreadsheet, and Internet functions of the software available on the computers in the school setting. The writer sought out and was awarded a fellowship to participate in a teacher technology-training institute. This training provided the teacher with the knowledge to effectively plan for and supervise the students throughout the implementation period.

Surveys as well as pretest and posttest data showed that the majority of students increased their knowledge of the available technology. The students were able to produce documents, spreadsheets, and multimedia presentations. The data showed that the students felt more competent to complete academic tasks after the training. The teacher became confident with integrating technology into the students' individualized education plans.

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Chapter I: Introduction

Description of Community

The setting for this practicum, completed in July 2000, was a city in New England. The population of the city was approximately 80,000, with a racial distribution of 66% White, 16% Black, 11% Hispanic, and 7% of other racial heritage according to the 1997-1998 town records.

Economically, the city is composed of mostly service establishments. Retail and wholesale trade, finance, insurance, real estate, and manufacturing are also represented. Approximately half of the workforce resided in the city. There was a 4% unemployment rate, which was 1% below the county rate and 2% below the state's unemployment rate. Per capita income was approximately $32,000. This was 14% below the county's average per capita income and 27% above the state's average per capita income.

Most of the houses are single-unit, detached dwellings. The median price per residential unit was $185,000. This figure was 16% below the county median price per home and 21% above the state median price per home.

The school district served approximately 10,600 students. Of these, 51% were White, 28% were Black, 17% were of Hispanic descent, and 4% were of other racial heritage. There are 12 elementary schools (Grades K-5), 4 middle schools (Grades 6-8), and 3 high schools (Grades 9-12) in the district, according to the strategic school profiles provided by the state. Approximately 100 students attended vocational schools outside of the district and approximately 70 students attended special education programs outside of the district.

Socioeconomic status of the students in the district can be illustrated by the following data: 25% of the students in the district received free or reduced-priced meals

and 32% of the juniors and seniors worked 16 or more hours per week. At the same time, 77% of the graduating students pursued 2- or 4-year degrees or other education after leaving the district's schools.

Special programs such as bilingual education, English for Speakers of Other Languages, and gifted and talented education were provided to approximately 26% of the student population. Special education services were provided in the following manner: 5 or fewer hours per week, 7%; 5.1-14.9 hours per week, 2%; 15 or more hours per week, 3%.

Writer's Work Setting

The writer's work setting was the smallest of the four middle schools in the district. The school population of approximately 430 students was 43% White, 33% Black, 23% Hispanic, and 1% Asian American. Approximately 28% of the students received free or reduced-priced meals.

The school organization was composed of five interdisciplinary teams that included the academic subjects of mathematics, science, social studies, and language arts. A Rainbow Team was also part of the school composition. The Rainbow Team included physical education, art, music, health, industrial technology, consumer sciences, technology, and reading. Two full-time guidance counselors, a full-time nurse, a social worker, a half-time school psychologist, and a half-time speech and language therapist staffed the student services department.

The school was located in an upper middle-class neighborhood, but was within 3 miles of several public housing projects. Approximately 300 students were provided transportation via public school busses. The school is within 1/2 mile of a high school and two elementary schools.

Students in the eighth grade scored the highest in the district on the State Mastery Tests of reading and writing. The mission statement of the school states "...is a caring place where the school community develops the students' highest potential through high academic expectation, respect, responsibility, and the celebration of diversity."

The professional staff included 38 teachers, 2 administrators, 2 full-time and 1 part-time student-service professionals. There are 4 full-time and 1 part-time noncertified instructional personnel on the staff. The average teaching experience for the professional staff was 15 years. Over 83% had earned at least a master's degree. Approximately 14% of the professional staff had been trained by the state as mentors, assessors, or cooperating teachers.

Of the approximately 430 students, approximately 10% received special-education services. Of these, 33 students received their services in the regular education setting. Two special-education teachers were assigned to service these students. These teachers implemented and monitored the individualized education plans (IEPs) for the exceptional students in Grades 6-8. The remaining 13 students with special needs were provided services in the extended resource (ER) program. The students assigned to the ER program for the 1999-2000 school year had been diagnosed as follows: 4 seriously emotionally disturbed (SED), 5 educable mentally retarded (EMR), 2 speech/language disordered, and 2 learning disabled (LD). Of the 13 students, 6 students were in Grade 8, 2 students were in Grade 7, and 5 students were in Grade 6. The students in Grade 6 and Grade 7 were given instruction in mathematics, language arts, science, and social studies in the two ER classrooms. They were included in the regular-education program for their Rainbow classes. The students in Grade 8 were included in the regular eighth-grade general math and U.S. history classes. They were also included in the Rainbow classes

with their regular education peers.

Two special-education teachers and a full-time instructional assistant staffed the ER program. Students had IEPs developed to address their special needs. Because varieties of disabilities were represented in the students, a variety of techniques, strategies, and special education methodologies were employed to provide appropriate services to these students.

A program-wide behavior-management system was in place as well as unique systems for each classroom. Students were rewarded for adherence to classroom and school guidelines, for demonstration of prosocial skills, and for academic achievement. Students also received aversive consequences such as loss of reward, time-outs, office referrals, and suspensions.

The ER program was unique in that it used two teachers and two classrooms. Students were grouped into small groups for part of the day and were scheduled for whole-group activities for other parts of the day. While in small groups (3-7 students), students received their instruction in language arts, science, mathematics, or social studies. While in the large group (8-10 students), students received instruction in special areas such as world geography, geometry, fractions, or most recently, independent silent reading. Reward activities were done as a large group. Learning games such as multiplication Bingo, state capital Bingo, and "How Much Do You Remember?" were played during the time when students were in the large group.

The two teachers had worked together in the ER program for 13 years. Both teachers taught each of the ER students for some part of the day. Other ER programs throughout the district used one self-contained classroom, had one teacher assigned to the program with an instructional aide, or separated their students by their disability. In these

programs, one teacher worked with the students with severe behavior problems and one teacher worked with the students with severe academic deficits.

Writer's Role

The writer was a special-education teacher in the ER program. The writer was responsible for developing, implementing, monitoring, and evaluating the IEPs for mathematics, social studies, and social skills for the students assigned to the ER program. Throughout the year, the two ER teachers consulted with one another and the regular education staff to provide the most effective program for each student. Behavior management plans were developed with the consultation of the social worker and the administrators. The writer participated throughout the year as a member of planning and placement teams (PPTs) that involved existing ER students or potential incoming students. Consultation and collaboration with the other student-service personnel, regular-education teachers, and administrators at the building and district level were essential to successful programming and implementation of the IEPs.

The writer was also the second teacher in the regular eighth-grade U.S. history and general math classes. The writer reinforced the lessons given in these classes in the ER classroom. Modifications and adaptations were made to adjust the curriculum to the individual needs of the ER students. The writer consulted with the regular-education teachers in both classes regarding lesson content, presentation, and assignments.

Chapter II: Study of the Problem

Problem Statement

The problem to be solved in this practicum was that ER students did not have experience in using the software applications available on the computers throughout the school and district. These students did not have the knowledge of the potential of these applications or how these tools could assist them in completing academic and personal work.

Problem Description

The ER program consisted of a group of 13 students with various exceptionalities that made them eligible for services under the Individuals with Disabilities Education Act (IDEA). Of these, 5 students were in sixth grade. The sixth-grade students were diagnosed as follows: 2 students were EMR, 1 student was SED, and 2 students were LD. The 2 seventh-grade students were both SED. The 6 eighth-grade students were diagnosed as follows: 2 were speech/language disordered, 3 were EMR, and 1 was LD. Each of the students assigned to the ER program had great difficulty producing written work of high quality. They had difficulty organizing their work for presentation to a teacher or to their classmates. Any research or information gathering had to be done under the supervision of at least 1 teacher.

The current technology was not available to the elementary schools during the 1998-1999 school year. Therefore, none of the sixth-grade students were exposed to the word processing, presentation, or spreadsheet functions of the Office 97 software package. The seventh- and eighth-grade students were exposed to the presentation application (PowerPoint) in the 1998-1999 school year. Of the eight students in Grades 7-8, seven were part of the ER program during the 1998-1999 school year. Of these, six

were given the opportunity to use the PowerPoint program for one assignment related to their social studies curriculum. Extensive supervision by both the ER teacher and the technology instructor was necessary to the successful completion of the projects. The one seventh-grade student who was not in the ER program during the 1998-1999 school year was exposed to the word processing and presentation software during the 1998-1999 school year through the regular education classes in which he was included.

The ER classrooms were next to one another. Neither classroom was equipped with a computer that had the capability to run the Office 97 software. Of the two teachers and the instructional assistant who staffed the program, only one of the teachers had aptitude with computer applications.

Problem Documentation

The writer had mediocre aptitude with the educational technology and the software available in the school and throughout the district. The district technology department distributed a survey in the winter of the 1998-1999 school year to assess the competency of each faculty member throughout the district. According to this survey, the writer had mediocre aptitude with the software available on the computers throughout the district. Specific areas of weakness included creating and using databases, creating and using spreadsheets, using the drawing tools, and creating Web pages. Areas specifically related to education that the survey indicated were weaknesses included record keeping and computer-based classroom management, enhancing curriculum through educational technology, assessment, and using technological tools (digital camera, projection device, or scanner). Questions regarding the faculty's desire to participate in workshops relating to the features of Office 95 were also included in the survey. The writer expressed a desire to participate in the introductory workshops for

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each of the four applications.

The ER students did not possess the skills to use the word processor, presentation, or spreadsheet functions of the computer in an efficient manner. The writer conducted a survey with the students in the ER program in the fall of the 1999-2000 school year. The results of this survey are included in Appendix A. The writer developed the survey with assistance from the technology instructor and other staff members who were considered "experts" according to the survey distributed by the district. Results of the survey indicated that the ER students considered themselves as "not knowing" how to perform most of the items listed on the survey. Several students responded that they "knew a little" about certain operations. For each item, at least one student considered himself or herself an "expert." This information is suspect. Further analysis of the responses showed that the experts also claimed to "not know" how to perform the more basic operations while claiming to be experts at the more advanced operations.

A survey was given to the ER students to measure their perceptions of their competency in producing academic assignments. The ER students did not consider themselves competent writers or able to produce assignments of high quality. Most students indicated that they would like to be able to create assignments that look neat and contain few errors. Most students believed that the work they produced before the implementation of this practicum was usually full of errors in both spelling and grammar. The students indicated that they did not feel comfortable creating projects for their science, social studies, or language arts classes. They related that they usually needed a great deal of teacher assistance whenever they were assigned this type of task. This survey is included in Appendix B.

The ER students in the seventh-and eighth-grades had all been included in the

regular education program for their nonacademic elective classes since their sixth-grade year. Interviews with their teachers, specifically the industrial technology and art instructors, revealed that the ER students were not competent to work independently when these classes used the technology center. Both teachers expressed concern over the amount of time the ER students required to complete the most basic tasks. The teachers were concerned that, because of the time they spent with the ER students, other students were not getting the supervision that they needed. The industrial technology teacher eventually left the ER students to "do their best " while he worked with the others. The projects done by the ER students were of poor quality and contained many errors.

Causative Analysis

The students in the ER program had not been exposed to the Office 97 software program enough to make them proficient with these tools. Of the 13 students in the ER program, 5 had just begun their sixth-grade year. Each of the sixth-grade students spent their fifth-grade year in one of the elementary schools throughout the district. Interviews with the fifth-grade teachers and a review of the teacher reports from each sixth-grade student's special-education file indicated that little work was done with word processing and there was no exposure to the spreadsheet (Excel) or presentation (PowerPoint) functions during the students' fifth-grade year. This was due to the lack of the software at the elementary level and the IEPs of the students.

The seventh- and eighth-grade students, with the exception of one seventh-grade student, were all in the ER program during the 1998-1999 school year. These students were exposed to the PowerPoint feature of the Office 97 suite during the 1998-1999 school year. Each of these students created a presentation of at least three slides. The technology instructor supervised each step of the process with assistance by the writer.

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These presentations were created using the most basic features of the application.

The only exposure to word processing was with software run by a different operating system than Microsoft Windows 97. There was no exposure to the Excel feature of the software. An interview with the technology instructor revealed that students exposed to the word-processing software on the other computers would not have the ability to use the Office 97 feature with efficiency. The one seventh-grade student who was a member of the regular-education teams during his sixth-grade year did not have the exposure to the Office 97 technology that his peers experienced. Interviews with his former teachers revealed that this student demonstrated severe behavior problems while in the technology lab during his sixth-grade year. Because of these behaviors, he was not on task for much of the time, or he was sent to the time-out center.

The technology course offered through the school was an elective class. This elective was only offered to eighth-grade students. If students chose other electives, they would not be exposed to the technology in the computer lab unless they received this instruction while in the lab with one of their academic classes. None of the ER students had elected the technology course.

The writer had mediocre aptitude with the operation of the Office 97 suite. The writer had mediocre aptitude with the uses of these features and in using the Internet to supplement classroom activities. Using the computers to teach new skills to students was completely out of the writer's realm of knowledge. Consequently, the ER students were not exposed to, or taught to use, the Office 97 software. This lack of confidence on the part of the writer resulted in a hesitation to schedule the ER students into the technology lab for instruction. Because of the writer's lack of ability to link the student's IEP goals to the available technology, the writer believed that the students were better off not going

to the technology lab. The writer felt that he was not able to answer the inevitable questions regarding the operation of the software.

The ER teacher responsible for teaching the language arts goals of the students' IEPs did possess a high aptitude for technology. Her preferred operating system was different from the Office 97 system. When this teacher brought groups of students to use the computers in the library for word processing, they learned to use a different system than Office 97. As stated earlier, this did not result in the students learning to use the word processor on the computers loaded with Office 97.

Scheduling students into the technology lab was difficult for the ER teachers. The technology lab was open to all of the teachers throughout the school. Each teacher was free to schedule time over a 2-week period. The ER program was unique in the school. Students from Grades 6-8 were included in the program. All of these students were included with their regular education peers for nonacademic, or Rainbow, classes. All three grade levels met with their Rainbow classes at different times throughout the 6-day rotating schedule. The writer also taught in the regular education program two periods per day. This resulted in a variety of ER groups during the 6-day rotating schedule. It was extremely difficult to find open slots in the technology lab that corresponded to the appropriate student groups in the ER program. This, coupled with the writer's reluctance to use the technology lab, resulted in many missed opportunities for the students to learn to use the Office 97 suite effectively.

The technology instructor during the 1998-1999 school year did not have an aptitude for working with students with special needs. Often times students scheduled to the technology lab with their regular education classes were sent to the time-out center because of conflicts with the instructor. During the few times the writer brought groups

to the lab, several students refused to comply with any of the instructions given by the former technology instructor. The attitudes of the students toward the former technology instructor prevented them from taking his instruction with an open, trusting, mindset.

Although the ER group was not primarily composed of students with behavior disorders, behavior problems were a major concern during all classroom instruction. Immature, acting-out, and withdrawn behaviors were often observed in all classroom academic activities. Many students became distracted by the misbehavior of those who acted out inappropriately. Consequently, students became inattentive toward instruction. This behavior was also apparent in the technology lab.

Relationship of the Problem to the Literature

This review was limited to research and articles written between 1989-1999. The ERIC, PsychInfo, PROQUEST, and Wilson Educational Abstracts electronic databases were used to discover sources. A review of the reference lists and a search of related major applied research papers and dissertations was also done to add to this review. The primary focus of this review was to discover literature-based causes of the problem and evidence of the problem in other settings. The writer limited the review to research done on computer use with exceptional students in Grades 4-9. Background information, historical foundations, and theory were researched. Teacher training was explored as well as uses of instructional technology in the inclusive classroom. Specifically, problems in the use of multimedia, word processing, and information retrieval were investigated. Research on attitudes of both students and teachers concerning technology were sought.

Ferretti and Okolo (1996) cited the National Commission on Excellence in Education and the National Commission on Social Studies in the Schools when stating

that there are numerous state, local, and national agencies that have claimed that our schools are not preparing our children for life after school. Students with disabilities are not prepared for the highly technical world of work when they leave school (Milone & Salpeter, 1996). The opportunities to use computers for advanced academic tasks and personal productivity are usually available to advanced students more than low-achieving students. This becomes more apparent as the students reach secondary school (Becker, 1990). Students with disabilities can be restricted from computers for various reasons. Among these are the lack of specialized software, ignorance of how to adapt regular software to meet the needs of exceptional students, and the lack of adaptive devices. Inequity in the opportunities afforded to students with special needs to use computers and educational technology is often a matter of oversight rather than being intentional (Neuman, 1991).

Lewis (1998) suggested that equity in computer use might not be enough. Students with learning disabilities, due to the nature of their disability, may require more access to computers. The ease of repeating a lesson, the high quality graphics, and the interactive component of many software applications are extremely effective methods for teaching learning-disabled students.

According to Walker and Williamson (1995a), many teachers of behavior-disordered students use the computer to support current practices as opposed to using these tools for change. A possible cause may be the attitude that these students do not possess the ability to gain anything from the computer beyond the practice and reinforcement exercises. Another may be that these teachers do not have the time to plan for more creative uses of the computer and educational software.

Many students with special needs reach middle school with deficits in

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technological skills that may hold them back from achieving at the same pace as their nondisabled peers (Schumaker & Lenz, 1998). Schumaker and Lenz further stated that along with the cognitive, social, and behavioral deficits that create the exceptionality in these individuals, many of these students are not aware of the potential that computers possess for helping in academic tasks. Students with disabilities have not been taught to use the computer in the elementary grades.

Blackhurst (1997) stated that many students with special needs are unable to perform functions such as reading, calculations, or keyboarding because of a "restriction in functional capability caused by the lack of personal resources" (p. 44). These restrictions hold exceptional students back from achieving as their nondisabled peers achieve. This lack of personal resources may keep disabled students from learning how to use computers.

Cavalier and Brown (1998) discussed the problem of physical limitations as a restriction to effective communication. Handwriting and speech are both effected by physical limitations. Many students with poor fine or gross motor coordination, speech and language disabilities, or both, experience great difficulties when asked to produce written work or to express themselves verbally.

Students with learning disabilities often have many ideas, but due to their poor spelling and writing mechanics, written assignments are often illegible. Revisions to correct these mistakes often make the papers look worse. Many of these students experience embarrassment when they see their final drafts with eraser marks and "white out" all over their work (Dalton, Winbury, & Cobb-Morocco, 1990). Storeygard, Simmons, Stumpf, and Pavlogou (1993) reported that middle-school students with learning disabilities experienced anxiety over writing assignments while being included

in a regular-education classroom. The students related that they did not want to submit assignments that were sloppy or full of errors. They wanted their assignments to be "good looking."

Some students have such severe learning disabilities in reading and writing that word processing programs with spelling checkers are ineffective. These students could not determine the proper spelling even after seeing the list of possible words provided by the spelling checker (MacArthur, 1998). Students in this study were not excited to write with the word processor or with paper and pencil.

Okolo and Ferretti (1998) stated that middle school students with disabilities are often included in regular education classes where they have little foreknowledge of the content areas covered in the curriculum. When asked to participate in cooperative activities, these students experienced frustration. Many did not want to participate in activities that required traditional research, reading, and writing.

A possible cause of the problem of special-needs students having very little experience with word processing software may be the lack of clear research on the subject. Bangert-Drowns (1993) conducted a meta-analysis of 32 studies of the use of word processing with exceptional students. The conclusion of this meta-analysis was that there was no solid research that proved word processing had a positive effect on the writing skills or attitudes of special-needs students.

Sepehr and Harris (1995) investigated the use of computers and educational software by teachers of students with learning disabilities. The authors used a survey to determine (a) if teachers used the computer, (b) what kept nonusers from using the computer, and (c) what type of software was used most often. Lack of training, shortage of teaching time, and lack of access to computers was among the reasons for nonuse.

Brigham, Hendricks, Kutcka, and Schuette (1994) conducted a series of training sessions for special-education teachers in the use of presentation software to develop lessons. Many of these teachers had no experience with this technology. The participants were uninformed of the various uses of hypermedia and multimedia as supports to curriculum. Participants expressed a commitment to the new medium and related that they wished they had this knowledge earlier. Moore, Rieth, and Ebeling (1994) found that many special-education teachers resisted using computers in their classrooms. These teachers believed that computers had a place as reinforcement instruments and were well suited for drill-and-practice, but not for much more. These teachers also were never given instruction on how to use the computer effectively as an instructional tool.

Romiszowski (as cited in Cavalier, Ferretti, & Okolo, 1994) stated that the cost of software and hardware was a primary cause of teachers not using technology to its fullest extent. Along with this, Romiszowski stated that the computer offers students the opportunity to work without teacher direction. This is against the philosophical construct of many special education teachers.

The literature shows that students with special needs do not have the same opportunities to use technology as their nondisabled peers (Becker, 1990; Schumaker & Lenz, 1998). Exceptional students can be excluded from using instructional technologies because of many factors. Among these factors are physical or cognitive impairments, severe learning disabilities, the lack of specialized software, or the attitude of the teachers (Blackhurst, 1997; Cavalier & Brown, 1998; Dalton et al., 1990; Neuman, 1991; Walker & Williamson, 1995a).

Students with special needs should have more opportunities to use educational

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technology than their nondisabled peers (Dalton et al., 1990; Lewis, 1998; MacArthur, 1998; Okolo & Ferretti, 1998; Storeygard et al., 1993). Unfortunately, many special education teachers either lack the knowledge to use educational technology effectively or have the attitude that educational technology is only useful to reinforce previously learned material (Bangert-Drowns, 1993; Brigham et al., 1994; Walker & Williamson, 1995b).

Chapter III: Anticipated Outcomes and Evaluation Instruments

Goals and Expectations

The students in the ER program (1999-2000) were expected to demonstrate the ability to use the word processing, multimedia, and spreadsheet functions of the computers available through the school to increase their personal and academic productivity. The students were also expected to demonstrate the ability to use the Internet to supplement their work through research and graphic enhancement.

Expected Outcomes

The following outcomes were projected for this practicum:

1. Each student will receive at least 40 hours of instruction in the computer lab. The writer consulted with the principal and the technology instructor to schedule sessions during school hours and after school.

2. The writer will complete at least 12 hours of training in the use of the word processing (Word), presentation (PowerPoint), and spreadsheet (Excel) functions of the Office 97 suite. The training will come from certified instructors in the use of these features. A record of training hours will be kept to measure this outcome.

3. The students will demonstrate the ability to identify and open the word processing, multimedia, spreadsheet, and Internet functions on the computers available in the school technology lab. A pretest and posttest will be given to evaluate the students' ability to perform these functions. The writer will monitor each student and assess their ability to open each of the functions. The students will be able to demonstrate this skill with 100% accuracy after the 8-month implementation period.

4. Each student will produce at least one document using the word processing function and its related features (i.e., spelling/grammar check, cut, paste, save, and

retrieve). A pretest and posttest will be given to evaluate the students' ability to perform these functions. Each student will score at least 80% on the posttest. The writer will monitor each student as they create their documents. The writer will request students to demonstrate their ability to use the spelling and grammar check, cut, paste, save, and retrieve features of the word processing program. Each student will produce at least one document of approximately 250 words with a maximum of five spelling or grammar errors. The students will store all of their work on 3.5 floppy discs that will serve as electronic portfolios.

5. Each student will create a multimedia presentation including text, animation, audio, and visual attributes. A pretest and posttest will be given to evaluate the students' ability to perform these functions. Each student will score at least 80% on the posttest. The writer will observe each student as they create their multimedia presentations. Each student will create presentations of at least five slides and store these in their electronic portfolios.

6. Each student will demonstrate the ability to use the spreadsheet function to collect data and perform several functions including obtaining a sum, a mean, and creating a graph from the data. A pretest and posttest will be given to evaluate the students' ability to perform these functions. Each student will score at least 80% on the posttest. The writer will observe each student as they use the spreadsheet application and perform the functions listed above. The students will perform these functions with at least 10 numbers in the spreadsheet. Student work samples will be collected in their electronic portfolios.

7. Each student will use the Internet and the World Wide Web to access information for personal and academic use. A pretest and posttest will be given to

evaluate the students' ability to perform these skills. Each student will score at least 80% on the posttest. The writer will observe each student as they search for information and graphics to enhance their documents and multimedia presentations. The students will use at least one search engine to access information and graphics. Each student will use information from the World Wide Web to supplement their documents and use the appropriate citations. Each student will use graphics, audio clips, information, or all of these from the World Wide Web to supplement at least one of their word processing documents and at least three of five slides in their multimedia presentations.

8. Each student will present their documents, multimedia presentations, or spreadsheet projects to an audience of students, educators, and family members. Each student will include an introduction of themselves and their projects, a description of the technology used, the content, and a closing statement. Their peers and the writer using a Likert-scale instrument will evaluate the student presentations. Each student will average at least 3.5 on the rating instrument.

Measurement of Outcomes

Outcomes 1-5 required a pretest and a posttest to measure the acquisition of the skills specific to each outcome. The writer and the technology instructor developed this pretest and posttest. Each item was in multiple choice or demonstration format. Teacher observation was also indicated as a means for measuring Outcomes 1-5. The writer kept a running anecdotal record of each student's progress throughout the 8-month implementation period. The writer's notes indicated the frequency of the students' successes or failures at each objective.

Outcomes 1-5 required the students to produce documents, slides, and spreadsheets. Students were also required to demonstrate the ability to use the Internet to

supplement their work. Each student saved his or her work on a 3.5 floppy disc that served as an electronic portfolio. After the 8-month implementation period, the writer evaluated each of these portfolios according to the standards put forth in the outcomes.

Chapter IV: Solution Strategy

Discussion and Evaluation of Solutions

The problem to be solved in this practicum was that ER students did not have experience in using the software applications available on the computers throughout the school and district. These students did not have the knowledge of the potential of these applications or how they can assist them in completing academic and personal work.

The literature review was limited to the discovery of solutions to this problem. Research, articles, and papers published between 1989-1999 have been included. The ERIC, PROQUEST, PsychInfo, and Wilson Educational Abstracts electronic databases were used to access these articles. A search of related dissertations was done as well as a review of the reference lists. This review was limited to the following topics: Uses of the computer to instruct students with special needs, the instruction of disabled students in the use of word processing, multimedia, spreadsheets, and the Internet, social-skill development and attitude change as a result of using the computer, and teacher training in the use of word processing, multimedia, spreadsheets, and the Internet as instructional tools.

The computer is now being considered a tool to "construct knowledge" (Fitzgerald, 1996, p. 123). Computers are used for writing, to solve problems, and to create projects. More and more, students are using interactive videodiscs, telecommunications, compact discs, and multimedia authoring programs to create academic projects. Sivin-Kachala and Bialo (1995) commented on a report by the Software Publishers Association. The report was based on a review of 133 studies that suggested that the educational technology available today can have positive effects on both learning-disabled and regular-education students in the areas of academic

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achievement, attitude toward school, and self-concept.

Middle school students with special needs can use the computer and the software applications to produce quality work. Students can work at their own pace. Corrections can be made with out public scrutiny (Male, 1994). Using computers to teach students with special needs is an effective approach because computers provide nonjudgmental, patient, attention to the individual user. The use of animation and graphics become motivational tools for students who are difficult to motivate. Computer-based instruction has resulted in significant positive changes in production and attitude in even the most severely handicapped students (Schery & O'Conner, 1997).

Edyburn (1991) conducted a study involving 15 middle-grade students with various disabilities. When given tasks involving information retrieval on computers, these disabled students performed as well as their nondisabled peers. Edyburn stated that having technology does not automatically give students the power to produce work of high quality. Disabled students must be taught to use the technology available to keep them from "becoming members of an information-poor class of society" (p. 88).

All students must master the basic elements of technology. The massive knowledge that exists can only be managed using technology. To insure that all students are taught to use the most current technology, Milone and Salpeter (1996) offered these suggestions: (a) keep computer labs open after school hours, (b) provide students with home-loans of computers, (c) train teachers to provide their students with adequate knowledge regarding the available technology, (d) secure grants and additional funding for technology in the schools, form partnerships with local businesses, (e) form partnerships with local businesses, (f) provide students with role models and mentors who are skilled with technology, (g) change attitudes toward disabled students and

technology use. These are methods to help close the gap between the "haves" and the "have nots" when it comes to computer use in our schools. It is of great importance to train all of the students in the use of the available technology.

Ryba, Selby, and Nolan (1995) stated that using computers could enhance the self-esteem, motivation, and self-confidence of disabled students. The authors offered several suggestions for teachers to elicit these feelings in their students. These included: (a) class recognition for accomplishments in technology related activities, (b) allow students to demonstrate techniques and new techniques learned about the software programs, (c) hold celebrations to recognize technological milestones, (d) award certificates of recognition, and (e) construct technology bulletin boards. Teachers can use many creative ideas to celebrate the learning of technology. Often, these will increase the improved attitudes that are the result of success with technology and the feelings of competence associated with this success.

Storeygard et al. (1993) stated that special-education students enjoyed using the word processing feature of computers. Many students have related the ease of revising their work when using the word processor. Word processing enables the disabled student to produce quality work with out the difficulty of paper-and-pencil editing.

Bangert-Drowns (1993) stated that word processing created two effects on student writing. First, due to the ease of editing documents, word processing helps students to obtain a sense of fluidity in their writing. Students are not so conscious of making mistakes because they know that any errors can be easily corrected. Second, word processing allows students to engage in higher-order thinking that leads to longer documents. Bangert-Drowns further stated that although word processing has these positive effects on student writing, there is a great deal to learn before effective word

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processing can begin. The many features and functions of word processing software require skill to operate efficiently. Educators must teach their students to use these tools effectively in order to manage all of the potential these applications possess.

Trollinger and Slavkin (1999) conducted a study in a district where, by 1997, each middle school had computers that ran Microsoft Office software. All students were exposed to Word, PowerPoint, and Excel. A student diagnosed with significant cognitive, behavioral, and speech and language deficits was experiencing difficulty in all areas of her individualized education program as well as in social situations. She was almost totally dependent on her teachers to help her in these areas. It was rare for her to initiate conversations or sustain an existing dialogue. After introducing this student to word processing and the email function of the computer, she began to correspond with a former teacher. Through this correspondence, the student was able to increase her reading and writing skills. She also used mathematics during these communications. The student began to chat enthusiastically about her work and offer help to the other students in the computer lab.

MacArthur (1998) reported that word processing with speech synthesis capabilities can increase the quality of work for those students who have such spelling deficiencies that conventional spell-checking devices are ineffective. Speech synthesis allows the computer to change words into speech. This enables students to hear what they have written. This function allows students who can not benefit from a spelling checker to edit their work by hearing what they have written.

MacArthur (1998) also discussed word-prediction software as a tool to assist learning-disabled students to word process with greater efficiency. Word-prediction software is designed to make predictions of words in the context of each sentence. The

writer need only to type the first few letters of a word and the software will provide several options for the writer to choose.

Although speech-synthesis and word-prediction software helped the disabled students in this study, MacArthur (1998) warned that these tools might not be effective for all students with spelling problems. MacArthur stated that matching these technological devices with adequate support was crucial to the success of this study.

Students with emotional and behavioral disorders (E/BD) have also benefited from using word processing software. Langone, Levine, Clees, and Koorland (1996) found that fifth-grade students with E/BD did not necessarily benefit from word processing over traditional writing assignments, but they did notice fewer instances of acting-out behavior during word processing activities. The students stayed on-task for greater periods of time when using the word processor. Cheney (1990) reinforced these findings. According to Cheney, computer assisted instruction with behavior-disordered students led to a higher duration of on-task behavior, more focused attention to tasks, and fewer instances of acting-out behavior.

Social skills have been developed through peer tutoring during word-processing activities. Fink (1990) studied the effects of cooperative learning and peer tutoring while using computers. By pairing E/BD students with a nondisabled partner and assigning the pair to a computer-related task, the E/BD students demonstrated a higher rate of on-task behaviors. The E/BD students related that they began to enjoy working when the computer was involved.

Utay and Utay (1997) found that pairing a student with learning disabilities with a nondisabled student during word processing increased the social skills of the learning disabled student. These students showed a positive attitude toward the activity.

demonstrated focused attention, and were contributing partners during the activities. Positive attitudes toward writing increased in both the learning-disabled students and the nondisabled students.

Word processing provides students with feedback concerning their work. By teaching students with E/BD to use word-processing software, these students can receive feedback concerning their work without asking the teacher for assistance. Unwillingness to ask for help is a primary characteristic of students with E/BD (Walker & Williamson, 1995b). By teaching students with E/BD to use personal-productivity (word processing, spreadsheet, and multimedia presentation) software, teachers will prepare these students to produce work that is acceptable to society. By the nature of their disability, students with E/BD do not behave in a manner that is socially acceptable. It is imperative to teach these students how they can produce quality work in spite of their social and behavioral deficits.

Computer-assisted instruction (CAI) can be an effective strategy for increasing student competency in academic areas (Okolo, 1992). Because of this increased competency, learning-disabled students that used the computer developed more positive attitudes toward their work. These students were excited to use the computer to work through their math problems. They related that they were doing better work using the computer.

Bottge and Hasselbring (1993) introduced a group of adolescents with learning and behavioral disabilities to videodisc technology to help them with their mathematical problem solving. Through this medium, the students were able to increase their performance on their test scores to equal those of their regular-education peers. Students in this study began asking for more work as they recognized their success.

Boone, Higgins, and Williams (1997) described videodisc technology as an exciting alternative to traditional instruction. Learning-disabled students found that the content of their academic lessons was easier to understand when videodiscs were used in the lesson. These students related that they enjoyed their mainstream classes more when videodisc technology was incorporated into the curriculum. Interactive videodisc technology allows students to participate in lessons in a manner that conventional textbooks or video cannot. High quality computer graphics and visual media provide a high interest venue for teaching today's students (Strauss & Kinzie, 1994). Multimedia technologies are tools that can foster problem solving and critical thinking skills (Ferretti & Okolo, 1996).

Okolo and Ferretti (1998) described an inclusive sixth-grade social studies classroom that was co-taught by a special educator and a regular-education teacher. The 11 disabled students who were included in the class had very little previous knowledge of the subject matter, in this case the Spanish colonization of the New World. Through the use of multimedia software, these students participated in the creation of a project describing the different issues involved with colonization. Each of the special-education students commented that they knew much more about the subject after participating in the project design. The students demonstrated this increased knowledge by answering questions and posing arguments to support their views about the colonization of the New World. The students related that they felt good about being part of the social studies class and about cooperative learning.

Gardner and Bates (1991) reported that middle-school students with mental handicaps enjoyed using the computer as compared to conventional academic tasks. Using computers seemed to elicit feelings that counteracted the negative attitude students

with learning and behavioral disorders had concerning academic tasks. These students reported that they felt smart when they used computers. Gardner and Bates reported that the students reported self-perceptions of competency, higher self-esteem, and a positive attitude toward learning because of computer use.

The World Wide Web, or the Internet, can be used to find information or to communicate with others outside of the classroom. Rutkowski (1999) stated that the "World Wide Web [WWW] and the Internet enable people to 'think locally and act globally' as well as to 'think globally and act locally'" (p. 74). Ewing, Dowling, and Coutts (1999) described a program titled Superhighway Across Rural Schools (STARS). Both primary and secondary students used the WWW as a platform for a cooperative project. The project demonstrated that the classroom could be expanded within a school, or outside of a school, using links to different classrooms or schools.

Davitt (1998) interviewed the coordinator of a special-education facility in the United Kingdom. According to Davitt, the Internet is an excellent means of finding images, raw materials, and text. The students in this school have taken an active role in their learning. The objective of the project was to have the students search the WWW critically and to evaluate what they found. Students used graphics and text to supplement their projects.

Meyen (1998) commented on the excellent opportunity for developing team projects using the WWW. Each member of the team can contribute in various ways; from exploring Websites to printing documents and images. Meyen further stated that the Internet allows students with disabilities to contribute to group projects. Since each role in searching the WWW is important to the success of the group project, disabled students can be essential to group success through their contributions.

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Holzberg (1998) reported that an inclusive class at an urban, Midwestern middle school has used the Internet to supplement projects. The students were required to create at least one project in the computer lab per month. One of these projects involved downloading images from the Internet and combining these images with the graphing program from Microsoft Office. The students also combined the information and graphics from the Internet with text from Microsoft Word. Students with special needs in this classroom began the year with anxiety, but concluded the year with a stronger sense of self-reliance.

Teachers of students with special needs must be knowledgeable of the current technology in order to teach their students effectively. Kress and Hafner (1996) described a training program that began as a series of workshops and grew into a campus-wide network of instructors. Those attending the initial workshops began working with others. Soon, the entire faculty was corresponding through email, developing multimedia projects, and connecting to the WWW.

Teachers with training in the use of multimedia software, such as PowerPoint, will be better able to use this medium to instruct students with learning and behavioral deficits. Brigham, Hendricks, Kutcka, and Schutte (1994) reported that preservice special education teachers who were trained to use multimedia authoring software were excited about the potential for using this strategy to teach their potential students. The teachers involved in the training reported that they left the workshop with new ideas that would be used with their future students.

The review of the literature has inspired many ideas for solutions to the problem to be solved in this practicum. The following section will review these solutions and evaluate each in terms of the setting, population, and scope of this practicum.

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The computer can be used as an instrument to create written documents and produce multimedia projects. Using the computer has had positive effects on students with and without special needs in the areas of academic achievement and positive self-concept (Fitzgerald, 1996; Gardner & Bates, 1991; Okolo & Ferretti, 1998; Sivin-Kachala & Bialo, 1995). Computers allow students to work at their own pace and provide non-judgmental feedback. The high quality graphics and animation available through most computer software stimulates and motivates exceptional students (Male, 1994; Scherey & O'Conner, 1997).

It is clear that using the computer as a tool to help disabled students to succeed is an effective intervention. The school has a technology lab and a competent technology instructor. It will be essential to the solution of the problem addressed in the practicum that the ER students use the computers and software as much as possible.

Milone and Salpeter (1996) offered several ideas that will increase the opportunities for the ER students to use the computers in the school with more frequency and effectiveness. Each will be discussed below.

Keeping the computer lab open after school is a solution that will be explored by the writer. With the amount of teachers wanting to use the computer lab during the day, after school may be the perfect time to offer the ER students extra practice using the software applications. The feasibility of this solution will be determined by a discussion with the principal and the technology instructor.

Providing home loans of the computers to the students is not feasible at this time. The computers are relatively new and quite expensive. Taking them apart and transportation to and from a student's home would risk damage to the hardware.

Training teachers to provide their students with adequate knowledge of

technology is an outstanding idea. Students with disabilities must be taught how to master the basics of technology (Edyburn, 1991). It is quite feasible within the scope of this practicum. With adequate training, the writer would have the competency to instruct the students and adapt lessons to meet the special needs of the ER students. This training will also lead to sharing with other professionals (Kress & Hafner, 1996).

Securing grants and additional funding for technology in the school is also quite feasible within the scope of this practicum. Sources can be researched and applications can be completed as the student training is being carried-out. These funds can lead to the purchase of computers and software for the ER program or for instructional materials that will supplement the hands-on lessons provided in the technology lab.

Forming partnerships with local businesses is always a good idea. Professionals working with the Microsoft Office 97 software on a regular basis can be invaluable to the instruction of the ER students. The novelty of having someone come in to teach will motivate the students. The writer would have to coordinate this effort with the principal and the district Director of Communications and Partnerships before exploring potential businesses.

Providing students with role models and mentors can also be accomplished within the scope of this practicum. Several students in the ER program have experience with the PowerPoint feature of the software. These students can be mentors to the students with no experience at all. Other students from within the school can be solicited to act as mentors. This would have to be approved by the principal, the teachers of these students, and the parents before they could participate.

Changing attitudes toward disabled students and technology use is not something that this practicum can address directly. However, as the results of the practium are

disseminated, those who may have had a negative outlook toward disabled students and technology use may change their minds. It is planned to share the results of this practicum with faculty from within the school and throughout the district.

To help build the self-confidence of the ER students and celebrate their accomplishments with technology, bulletin boards can be created, celebrations held, and certificates created and awarded. Students can be allowed to share any exciting new procedure with the others. All of these suggestions by Ryba et al. (1995) can easily be included in the practicum implementation.

Teaching students to use the word processing feature of the software is feasible and sensible in the scope of this practicum. Research has shown that using the word processor has led to easy revisions, more fluidity, and longer documents (Bangert-Drowns, 1993, Storeygard et al., 1993). Word processing has been shown to be effective with learning-disabled students, students with emotional and behavioral disorders, and those with mental handicaps (Cheney, 1990; Langone et al., 1996, Walker & Williamson, 1995b). Each computer in the technology lab has the Microsoft Word application and can be used to teach this skill. Word processing can also be used in conjunction with other applications of the Office 97 suite and the World Wide Web (Holzberg, 1998).

Social-skill development can be promoted using word processing. Cooperative learning can easily be done when word processing, creating multimedia presentations, or using the spreadsheet functions (Fink, 1990; Utay & Utay, 1997; Walker & Williamson, 1995b). By teaming the ER students when they use the computers, the students will eventually learn to work together and problem-solve to complete their assigned tasks (Ferretti & Okolo, 1996).

Speech-synthesis and word-recognition software can help those students with

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significant learning disabilities (MacArthur, 1998). Although these features are excellent additions to word-processing software, they are expensive and, according to district policy, would have to be made available throughout the district if they were used at the school. At this time, word-recognition and speech-synthesis software are not feasible solutions to the problem.

Computer-assisted learning and videodisc technology are both new and exciting techniques to instruct students with disabilities (Boone et. al., 1997, Bottge & Hasselbring, 1993; Okolo, 1992; Strauss & Kinzie, 1994). These strategies are effective in teaching disabled students academic skills, but there has been no research to show that either can be used to teach students how to use the personal productivity software installed on the computers in the school. If interactive videodiscs or computer-assisted programs that will teach the ER students to become proficient with word processing, multimedia production, and spreadsheets become know to the writer, then the use of these will be appropriate to the practicum. Again, the use of these items would have to be approved by the district technology department and made available to throughout the district.

Teaching students to use the Internet can help to create more appealing documents as well as allowing students to be more involved in the creation of projects (Davitt, 1998; Ewing et al., 1999; Meyen, 1998; Holzberg, 1998; Rutkowski, 1999). Teaching the ER students to use the WWW to access text, images, and graphics to supplement their work is an effective strategy and quite feasible in the scope of this practicum. All of the school's computers have access to the WWW. Students can be taught to find Websites that are related to the topic of their papers, or to find video and still image libraries to illustrate their work.

Teachers of students with special needs should receive training in the use of technology (Brigham et al., 1994; Kress & Hafner, 1996). As stated previously, this solution will be effective in the scope of this practicum. It is feasible that the writer will receive training in the use of the Office 97 software and pass this knowledge on to the ER students.

Description of Selected Solutions

During implementation, the writer sought out and obtained instruction in the use of the word processing, multimedia, and spreadsheet functions of Microsoft Office 97. Because of this training, the writer developed and implemented lessons to teach these skills to the ER students. The writer consulted with the technology instructor and scheduled the ER students into the technology lab for lessons using the computers.

The writer consulted with the principal and the technology instructor regarding the use of the computers after school. The ER students used this extra-curricular time to practice their skills and developed new skills in using the software applications.

The writer investigated and applied for grants and supplemental funding during the course of the practicum. Any money received as a result of these grants could have been used to improve the ER students' skills at the Office 97 software. Sources from within the district and from private sources were investigated.

Consultation with the district Director of Communications and Partnerships was conducted to try to secure a partnership with local businesses to support the goals of the practicum. Guest speakers, presenters, and employees who used the Office 97 (or related Microsoft software) were invited to work with the ER group.

Student mentors were selected from the ER group to assist the other, less experienced students. Consultation with the principal and the technology instructor to

determine the feasibility of using other students from the general education population was done.

During the course of the implementation period, the students were required to work in cooperative groups. Lessons were developed to stimulate collaboration between the small groups of students. When possible, the ER students were paired with a nondisabled student.

Instruction in the use of the WWW to enhance student projects was done during the implementation period. Lessons were developed to teach the ER students to search the Internet efficiently. The students were taught how to download text and images from the Internet and how to include these into their work.

Report of Action Taken

Implementation began with a consultation with the school principal. The concept of the practicum was discussed, including the idea of bringing in speakers, holding celebrations, and working with students from the regular-education population to work with the ER students in the technology lab. The principal was in favor of the action plan and gave his consent to each of the proposed strategies.

The technology instructor was also consulted and informed regarding the proposal. The technology instructor was cooperative and gave suggestions regarding efficient scheduling of the ER groups. Sessions were scheduled for the next two weeks and the lesson plans for the first sessions were discussed.

Scheduling was done to ensure that each of the ER students would spend at least 45 minutes in the technology lab during the first week of implementation. This required an inspection of the 6-day rotating schedule so that sessions in the technology lab would not interfere with any of the regular education classes that the students were included. A

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schedule of appropriate time slots throughout the 6-day rotating schedule was determined and used throughout the implementation period.

A meeting with the district Director of Public Relations and Partnerships was scheduled. Prior to this meeting, a copy of the proposal was sent to the director's office for her perusal. The meeting included a brief review of the problem and the goals of the practicum. The writer requested assistance in securing mentors for the students during this project. Speakers were also requested. The director was not confident that mentors could be secured, but was excited about the project and confident that she could solicit several district administrators and community members to speak to the students over the course of the implementation period.

The writer administered a survey to measure the students' competence with technology. The writer developed this survey with the assistance of the technology instructor and other faculty members. These faculty members were highly competent with the word processing, multimedia, spreadsheet, and Internet functions of the computers available in the school and throughout the district. Another survey developed by the writer to measure the ER students' feelings associated with academic tasks was administered before instruction began. These surveys can be found in Appendix A and Appendix B.

The initial sessions included an introduction of procedures and expectations by the technology instructor. This included a review of the vocabulary that would be used throughout the instructional sessions. The technology instructor used charts and demonstration to familiarize each group with the monitor, the mouse, the keyboard, the 3.5 floppy disk drive, and the 3.5 floppy disc. Safety rules were introduced and discussed. General guidelines for appropriate behavior while in the technology lab were

stated and discussed for understanding.

The writer explained that the group would be taking a pretest to determine what each student knew about the word processing feature of the software. A set of 15 separate commands was given to the students. The writer and the technology instructor monitored each student following each of the commands and recorded whether the command was properly executed. The pretest and posttest items are included in Appendix C.

The sessions following included direct instruction of the skills necessary to create a document using Microsoft Word 97. Each of the lesson plans for this unit has been included in Appendix D. The writer acted as the primary instructor with assistance from the technology instructor and the ER instructional assistant. Sessions were scheduled to allow each student to receive instruction of each lesson. During this time, the writer presented the group with a pretest of the skills necessary to successfully use the Internet to research and supplement their projects. The pretest and posttest items are included in Appendix C. After the instructional lessons in word processing were completed, the writer scheduled a celebration to acknowledge the completion of the lessons. Parents and faculty members were invited. Refreshments were served and each student was awarded a certificate of achievement for completing the unit.

Before the next sessions in the technology lab, the writer directed the students to choose a topic from their history lessons on which to create a report. The students were provided a set of guidelines to follow when researching their topics. The subjects of these reports covered a broad range of topics from The Stone Age to Malcolm X. The students worked on these reports for approximately five weeks. During this time, the writer made arrangements with the technology instructor to open the lab after school

hours. Five of the students made arrangements to come after school to put in extra hours working on their reports.

Each student was monitored and assisted during the process to ensure that the appropriate word-processing skills were being used. The instructors also assisted the students locating appropriate Websites for research and images. When each of the students had completed the assigned task, a posttest was given to determine the word processing skills that were mastered over the course of the lessons.

After each student completed his or her documents, the writer scheduled a second celebration. Again, parents and faculty members were invited. In addition, the district Director of Human Relations was invited to speak to the group regarding his experience with computer technology. Each student was presented with a copy of their reports and a certificate of achievement. A bulletin board was created in the hallway to display the reports.

During the course of the word processing lessons, the writer became aware of a grant offered through the district for a stipend of up to $500. The grant was titled the "Fund for Excellence" and would be awarded to teachers from throughout the district with innovative projects that needed funding. The writer completed the application for this grant. However, the grant was not awarded. Approximately three weeks following the unsuccessful attempt to secure the "Fund for Excellence" grant, the writer was made aware of a fellowship award directly related to technology training. A new staff development program titled the "Teacher Technology Training Institute" (TTTI) was being developed in cooperation with the community technical college located in the city. A group of teachers would be selected from the applicants to pilot this program. The writer applied for this fellowship and was selected to be included in the group of teachers

to receive technology training through the TTTI.

The TTTI met once every week from 3/8/00-4/12/00 and from 4/27/00-5/17/00. There was a week off for the spring vacation. Experts from throughout the district taught the sessions. Each session focused on a skill that could be used to enhance the curriculum in any subject or grade level. The sessions taught participants to use such Office 97 applications as Word 97, PowerPoint, and Excel. Also included in the instructional curriculum were lessons on using the digital camera, creating a Website using Microsoft Front Page, and evaluating Websites.

Following the celebration of the students' completion of the word processing unit, the writer began a unit on using PowerPoint to create multimedia presentations. During the initial session, the writer presented a PowerPoint presentation designed to demonstrate all of the features of PowerPoint. The writer designed this presentation and included font changes, different backgrounds, images from the Internet and Clip Art, transitions, and effects.

After the presentation, the writer gave the students a pretest on the use of PowerPoint. Each student was monitored as the writer directed the group to perform a set of 15 commands. The PowerPoint pretest and posttest items are included in Appendix D.

Students were taught to open the PowerPoint application and add text to slides. The technology instructor suggested that the students use information about themselves when adding text to the slides. The writer developed a mini-unit titled "All About Me" and used the objectives as guidelines for the students during these initial sessions to teach PowerPoint. The objectives are included with the lesson plans for sessions 13-14 found in Appendix D. The writer also demonstrated the procedures for changing the style and color of the font and background, adding images from the Clip Art menu and the Internet.

and adding transitions, effects and sound to the power point slides. Each of these lesson plans can be found in Appendix D.

Following the introductory lessons in PowerPoint, the writer scheduled a celebration to recognize the students' achievements. Again, parents and selected building faculty members were invited to attend. The writer also invited another of the individuals suggested by the Director of Public Relations and Partnerships, the coordinator of the district's instructional media center, to speak with the group. The coordinator was an expert in graphic design and had professional experience using the Office 97 applications to create brochures and presentations for the district and the city. Each student received a certificate of accomplishment during the celebration. Refreshments were served.

Sessions 16-22 were focused on the completion of the individual PowerPoint presentations by each of the students. The writer and technology teacher monitored and assisted individuals as they developed their slides, searched the Internet for content and images, and added effects to their slides. Each grade-level group was scheduled into the technology lab for approximately the same amount of time. The technology lab was made available to the students after school hours. Again, five students took advantage of this opportunity to do extra work on their projects. The writer, the technology instructor, and the ER instructional assistant monitored and assisted individuals throughout the six-week period to ensure that appropriate technique was being used, as well as appropriate images from the Internet. A posttest was given to the students following the completion of the PowerPoint presentations.

A fourth, and final, celebration was scheduled for the last Friday of the school year. The writer invited all of the speakers from the previous celebrations to return. The Director of Partnerships and Public Relations was also invited as well as the building

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administrators, selected student support personnel, and the parents and guardians of the ER students. The speaker for this final presentation was the district software integrator and co-director of the TTTI. The director presented the students with an advanced PowerPoint presentation that illustrated the director's vision of the future from the aspect of technology.

To conclude the celebration, each student presented his or her PowerPoint presentations. Each student was asked to evaluate their peers according to a list of five objectives. The writer created the evaluation instrument and the students were given practice scoring one another before the actual presentations. The writer collected the evaluations and saved these for analysis.

The writer also addressed the students, praising the group for the effort that had been put forth over the course of the implementation period and urging the group to continue to practice the techniques that had been taught. Each student received a certificate of achievement that the writer created using PowerPoint. Refreshments were served.

A final unit developed to teach the skills necessary to use the Excel, or spreadsheet, application was implemented over the last three weeks of the school year. The writer introduced the unit with a brief review of the uses of word processing and multimedia programs. The writer then described the Excel program as very important in the business world. The writer prepared a pretest of six items. This pretest was given to the students in written form to avoid repetition of the numerous bits of data required to fill-in a small spreadsheet. Following the pretest, the writer demonstrated the procedures necessary for the pretest items to be completed successfully.

The following sessions focused on the skills necessary to create a spreadsheet,

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find a sum, determine an average, and create a graph from the data in a spreadsheet. These lessons are included in Appendix D. During the presentation of this material, students took the time to practice their PowerPoint presentations and make modifications as they saw necessary. The writer, technology instructor, and the ER instructional assistant monitored and assisted the students as they completed the lessons in Excel.

The writer applied for admission to another series of courses offered through the TTTI that were scheduled to begin the second week of July over a five-day, twenty-hour period. The sessions were developed to supplement the initial TTTI sessions and give further insight and practice using the programs available on the Office 97 suite. The writer completed this program as scheduled.

During the implementation period, each student created an electronic portfolio using a 3.5 floppy disc. The students' discs contained their word-processing projects, the "All About Me" Power Point projects, and the spreadsheets and graphs created during the final unit on Excel. Also included on the discs were most of the images found on the Internet and used with the first two projects. The writer viewed each of the discs and analyzed each for content and quality. The analysis provided the writer with data to complete the results section in the following chapter.

Chapter V: Results

Results

The problem to be solved in this practicum was that ER students did not have experience in using the software applications available on the computers throughout the school and district. These students did not have the knowledge of the potential of these applications or how they could assist them in completing academic and personal work. In addition, the writer had mediocre competence with the software applications available on the computers. Consequently, the ER students were not scheduled to use the available technology.

Through a review of the literature and consultation with essential personnel, the writer determined that this problem could be solved by creative scheduling, consultation with the technology instructor, specialized lessons, and staff development workshops for the writer. In addition to these strategies, the writer made arrangement with the district Director of Public Relations and Partnerships to have various speakers address the ER group regarding the importance of technology education. These speakers were invited to attend celebrations scheduled to coincide with the completion of specially developed units of instruction in word processing, multimedia presentation, and spreadsheet applications.

The goal of this practicum was that the students in the ER program (1999-2000) would demonstrate the ability to use the word processing, multimedia, and spreadsheet functions of the computers available through the school to increase their personal and academic productivity. The students would also be able to demonstrate the ability to use the Internet to supplement their work through research and graphic enhancement.

The following outcomes were projected for this practicum:

1. Each student would receive at least 40 hours of instruction in the computer lab. The writer consulted with the principal and the technology instructor to schedule sessions during school hours and after school.

This outcome was not met. Of the 12 ER students, 11 received at least 40 hours of instruction in the technology lab over the course of the implementation period. Table 1 shows the hours in the technology lab for each student.

2. The writer was to complete at least 12 hours of training in the use of the word processing (Word), presentation (PowerPoint), and spreadsheet (Excel) functions of the Office 97 suite. The training would come from certified instructors in the use of these applications. A record of training hours would be kept to measure this outcome.

This outcome was met. The writer was accepted into the initial group of teachers to attend the Teacher Technology Training Institute (TTTI) offered through the district and in cooperation with the local community technical college. The TTTI included 20 hours of training in the use of word processing, multimedia presentation, and spreadsheet applications. The writer attended each of the TTTI sessions for a total of 20 hours of training.

3. The students would demonstrate the ability to identify and open the word processing, multimedia, spreadsheet, and Internet functions on the computers available in the school technology lab. A pretest and posttest would be given to evaluate the students' ability to perform these functions. The writer would monitor each student and assess their ability to open each of the functions. The students would be able to demonstrate this skill with 100% accuracy after the 8-month implementation period.

Table 1
Hours of Instruction in the Technology Lab

Student	Hours
1	42.75
2	29.75
3	42.75
4	41
5	43
6	42
7	40.25
8	40
9	41.75
10	44.25
11	42.75
12	42.5

This outcome was met. In each of the posttests, each student completed the item requiring the students to open each of the applications with 100% accuracy. The pretest/posttest data are found in tables 2-4. The pretest and posttest items are found in Appendix C.

4. Each student would produce at least one document using the word processing function and its related features (i.e., spelling/grammar check, cut, paste, save, and Retrieve). A pretest and posttest would be given to evaluate the students' ability to perform these functions. Each student would score at least 80% on the posttest. The

writer would monitor each student as each created his or her documents. The writer would request students to demonstrate their ability to use the spelling and grammar check, cut, paste, save, and retrieve features of the word processing program. Each student would produce at least one document of approximately 250 words with a maximum of five spelling or grammar errors. The students would store all of their work on 3.5 floppy discs that would serve as electronic portfolios.

This outcome was met. Each student produced a document of at least 250 words with a maximum of five errors in spelling, grammar, or both. The students saved these

on Table 2

Word Processing Pretest and Posttest Scores

Student	Pretest (%)	Posttest(%)
1	7	100
2	20	100
3	0	100
4	20	100
5	27	100
6	27	100
7	7	93
8	13	100
9	27	93
10	13	100
11	33	100
12	20	93

3.5 floppy discs. Each student scored at least 80% on the posttest. Table 3 shows the results of the word processing pretest and posttest. The pretest and posttest items can be found in Appendix C.

5. Each student would create a multimedia presentation including text, animation, audio, and visual attributes. A pretest and posttest would be given to evaluate the students' ability to perform these functions. Each student would score at least 80% on the posttest. The writer would observe each student as each created their multimedia presentations. Each student would create presentations of at least five slides and store these in their electronic portfolios.

This outcome was met. Each student created a Power Point presentation of at least five slides. Each presentation included text, animation, audio, and visual attributes. The students saved these on 3.5 floppy discs. Each student scored at least 80% on the posttest. Table 3 shows the results of the Power Point pretest and posttest. The pretest and posttest items can be found in Appendix C.

6. Each student would demonstrate the ability to use the spreadsheet function to collect data and perform several functions including obtaining a sum, a mean, and creating a graph from the data. A pretest and posttest would be given to evaluate the students' ability to perform these functions. Each student would score at least 80% on the posttest. The writer would observe each student as each student used the spreadsheet application and performed the functions listed above. The students would perform these functions with at least 10 numbers in the spreadsheet. Student work samples would be collected in their electronic portfolios.

This outcome was not met. Of the 12 ER students, 10 scored at least 80% on the

Table 3
Power Point Pretest and Posttest Scores

Student	Pretest (%)	Posttest (%)
1	40	100
2	60	100
3	53	100
4	73	100
5	80	100
6	73	100
7	53	87
8	53	93
9	67	100
10	33	100
11	27	87
12	53	100

posttest. Table 4 shows the results of the pretest and posttests. The pretest and posttest items can be found in Appendix C.

7. Each student would use the Internet and the World Wide Web to access information for personal and academic use. A pretest and posttest would be given to evaluate the students' ability to perform these skills. Each student would score at least 80% on the posttest. The writer would observe each student as they searched for information and graphics to enhance their documents and multimedia presentations. The students would use at least one search engine to access information and graphics. Each

student would use information from the World Wide Web to supplement their documents and use the appropriate citations. Each student would use graphics, audio clips, and/or information from the World Wide Web to supplement at least one of their word processing documents and at least three of five slides in their multimedia presentations.

This outcome was not met. Of the 12 ER students, 7 scored at least 80% on the posttest. Table 5 shows the results of the pretest and posttest. The pretest and posttest items can be found in Appendix C.

Table 4
Excel Pretest and Posttest Scores

Student	Pre (%)	Post (%)
1	50	100
2	50	100
3	33	100
4	67	100
5	67	100
6	67	100
7	0	50
8	67	100
9	50	17
10	33	100
11	67	100
12	67	100

8. Each student would present their documents, multimedia presentations, or

spreadsheet projects to an audience of students, educators, and family members. Each student would include an introduction of themselves and their projects, a description of the technology used, the content, and a closing statement. Their peers and the writer using a Likert-scale instrument would evaluate the student presentations. Each student would average at least 3.5 on the rating instrument.

Table 5
Internet Pretest and Posttest Scores

Student	Pre (%)	Post (%)
1	0	86
2	0	86
3	0	71
4	14	86
5	14	100
6	57	71
7	0	71
8	14	71
9	29	86
10	29	71
11	71	86
12	43	86

This outcome was met. Each student presented the Power Point presentation that each created during the implementation period. The students presented to a group consisting of students, parents, and educators. Each student earned at least a mean score

of 3.5 on the 5-point Likert scale developed by the writer. Table 6 shows the mean scores of the peer evaluations. The Likert scale used as the peer evaluation tool can be found in Appendix E.

Other data has presented itself during the course of the implementation period. The writer used two surveys before implementation. The first of these surveys was developed to measure the ER students' feelings associated with competence on academic

Table 6
Mean Scores of the Peer Evaluations of the PowerPoint Presentations

Student	Mean
1	4.28
2	4.94
3	4.44
4	3.84
5	4.44
6	3.84
7	4.14
8	4.54
9	4.15
10	3.84
11	4.62
12	3.75

tasks before any lessons were implemented. The second survey was developed to determine the ER students' competence with technology before the implementation

Table 7

Feelings of Extended Resource Students Associated With Competency in Academic Tasks

Question	Responses			
Are you satisfied with the way your work looks after you write a paper?	Yes	No	Sometimes	I do not write papers
	2	8	2	0
	10	0	2	0
When you write papers, does your teacher have to correct most of the spelling and grammar?	Yes	No		
	9	3		
	1	11		
How would you describe your writing assignments at this stage of your life?	Excellent	Good	Poor	I do not write papers
	1	5	2	4
	1	7	1	2
How would describe your ability to complete projects for science, social studies, etc.?	Great	I need lots of help	It's too hard to make good projects	I don't even try
	1	9	2	0
	5	6	1	0
How do your written math assignments usually turn out?	Neat and accurate	Messy, but accurate	Messy with mistakes	I do not complete math assignments
	2	2	8	0
	5	2	4	1
If you were given an assignment that required you to write a paper and make a presentation about your work, how would you feel?	Happy	Scared	Mad	Sad
	2	3	5	2
	9	2	1	0

Note. Pre-implementation scores appear above post-implementation scores.

period. Table 7 shows the preimplementation and postimplementation results of the survey to measure the feelings of the ER students associated with academic competence. Tables 8-11 show the preimplementation and postimplementation results of the survey to measure technology competence. The items used in these surveys can be found in Appendix A and Appendix B.

Discussion

The original group consisted of 13 students. This number changed to 12 after one sixth-grade student was transferred to an alternative placement prior to the implementation period. The exceptionalities present in the ER group made this action necessary at times. This student presented significant behavioral and social maladjustment throughout the first three months of the school year. The PPT determined that an alternative placement would be the least restrictive environment for this individual.

Scheduling the ER students into the technology lab was instrumental to meeting the first outcome. Lewis (1998) stated that students with learning disabilities should have a greater opportunity to use the available technology. According to Milone and Salpeter (1996) making the technology lab available to students after school was an effective strategy to insure that students with disabilities have an opportunity to use the available technology. The writer scheduled each grade-level group into the technology lab for at least 40 hours over the implementation period. However, one student was absent 35 days from 11/29-6/15. This resulted in the student missing 14 hours of technology instruction. This student was also unable or unwilling to stay after school to make-up the hours required to meet the 40-hour criteria. Students 4, 5, and 7-12 all requested and

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Table 8

Pre-Implementation and Post-Implementation Results of Technology Survey: Multimedia (N=12)

Item	I Don't Know	I Know a Little	I'm an Expert
Open the program	7 0	3 4	2 8
Name your project	3 0	4 3	3 9
Import pictures and sounds	8 1	2 5	2 6
Record sounds	5 6	7 2	0 4
Use the tool palette	9 1	3 3	8 4
Use paint and draw tools	5 1	3 4	4 7

Note. Pre-implementation results are recorded above post-implementation results.

To ensure proper instruction for the students, the writer needed to become proficient with the applications being taught to the students (Edyburn, 1991). The writer sought training through the district. This training came through a fellowship awarded to the writer to attend the initial series of lessons made available to teachers from throughout the district. Presented in conjunction with the local community-technical college, this Teacher Technology Training Institute (TTTI) provided training in the use of

word processing, multimedia presentation, spreadsheets, and the Internet as strategies to enhance curriculum. In addition to these topics, the training included instruction in designing Web pages, use of the digital camera, and evaluating Websites. The 20 hours of instruction allowed the writer to practice the techniques necessary to give instruction to the ER group throughout the implementation period. This training became possible by seeking out grants available to enhance technology training (Milone & Salpeter, 1996). If the writer was not actively seeking financial support, this opportunity could have been missed.

Bangert-Drowns (1993) stated that students with disabilities needed to be taught the many features and functions of the software applications available to students. The features used in the Microsoft Office 97 software package were used to increase the academic functioning of handicapped middle school students (Trollinger & Slavkin, 1999). Each pretest and posttest began with a command to open the specific application (Word, Power Point, Excel, or the Internet). Outcome 3 required the students to "identify and open" each of these applications. By demonstrating this skill, the students showed that they could enter an application. From this point, students could use trial and error to begin working in any of the three applications if they had forgotten the skills necessary to use the functions within the application. It was necessary to identify and open an application before any work could be done.

Bangert-Drowns (1993) stated that word processing allowed students to write with fluidity and create longer documents. Each student created a document of approximately 250 words. During this process, the students demonstrated the ability to modify their documents using the options available on the Word 97 toolbars. Centering

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and boldface were popular commands. Each student used the spelling and grammar check effectively. Several students needed assistance to choose the correct edit. Teachers were available throughout the process to assist students in this area. Due to the significant disabilities many of the students experienced in verbal reasoning and language mechanics, the assistance from the teachers was essential to the completion of the documents. Students also demonstrated the ability to use the Word Art function to create titles for their documents. In addition to Word Art, to supplement their title page, students inserted a graphic found on the WWW. Many of the students expressed pride in the appearance of their documents after the title page was added. It is important to note that the writing skills of the students in the ER group were significantly limited. Assistance was also required to translate the information gleaned from their research into appropriate sentences. However, the skills needed to use the word processing application effectively were evident in each student as indicated through the posttest results and the writer's observations.

The students were also successful in creating multimedia presentations using PowerPoint. The format of the PowerPoint slides allowed the students to use single sentences and bullets to state the necessary information. The students were excited to use the clip art and WWW to find images to supplement their presentations. The technology instructor used the scanner to make images from library books available to the students. Students also enjoyed the freedom to choose the effects and transitions to modify their presentations. Male (1994) stated that exceptional students enjoyed using technology because of the opportunities to experiment with out public scrutiny. Once the skills were mastered, students experimented with many combinations of sound, effects, and slide

Table 9

Pre-Implementation and Post-Implementation Results of Technology Survey: Word Processing (N=12)

Item	I Don't Know	I Know a Little	I'm an Expert
Open the program	8 0	2 2	2 10
Check spelling and grammar	7 0	4 3	1 9
Delete text	3 0	4 1	5 11
Copy text	6 1	5 5	1 6
Cut and paste	9 0	2 3	1 9
Import graphics	9 0	3 4	0 8
Use Word Art	9 0	2 4	1 8
Title your document	5 1	5 2	2 9
Save your document	5 2	4 0	3 10
Use Save As	6 0	5 2	1 10
Use folders	5 1	4 3	3 8

Note. Pre-implementation scores are recorded above post-implementation scores.

Table 10

Pre-Implementation and Post-Implementation Results of Technology Survey: Spreadsheet (N=12)

Item	I Don't Know	I Know a Little	I'm an Expert
Open the program	10 0	1 4	1 8
Enter data	11 0	1 6	0 6
Perform functions	10 0	0 6	2 6
Create a graph	10 2	2 6	0 4
Sort data	11 5	1 5	0 2

Note. Pre-implementation results are recorded above post-implementation results.

transitions that made each presentation unique. The skills mastered during the word processing unit were helpful to the students during the creation of the PowerPoint presentations. Modifying font size and style, spelling and grammar check, delete, cut and paste, and Word Art were all used by the students when creating these presentations. Introduction of the skills necessary to perform operations in the spreadsheet application began near the end of the school year. At this time, many of the students (particularly the eighth grade girls) became bored with instruction. During the sessions designed to teach the Excel application, several students refused to participate. At times students displayed disruptive behaviors and were removed from the technology lab for time-out. Student 7 and student 9 were both absent three days during this period of instruction. Both of these

students were removed at least once during this period. Of the 12 ER students, 10

Table 11

Pre-Implementation and Post-Implementation Results of Technology Survey: Internet (N=12)

Item	I Don't Know	I Know a Little	I'm an Expert
Log on	6 0	4 1	2 11
Use a search engine	8 0	4 0	0 12
Use a graphics library	8 1	3 6	1 5
Import graphics into a folder	8 2	4 4	6 1
Download information or programs	7 2	4 4	1 6

Note. Pre-intervention results are recorded above post-intervention results.

achieved 100% on the posttest. Only students 7 and 9 failed to meet the 80% criteria. Absence from class during instruction could be the cause for the low scores on the posttest. The 10 students who scored 100% on the posttest all had the opportunity to organize data in spreadsheets, perform functions with the data in a spreadsheet, and create graphs from the data in a spreadsheet.

The skills necessary to use the Internet effectively to supplement these assignments were taught and reinforced throughout the implementation period. However,

during the final lessons involving Excel, using the Internet was inappropriate. Of the 12 ER students, 5 students did not meet the 80% criteria on the posttest. Of these 5 students, 4 were diagnosed as EMR. Each of these students failed to complete the items requiring the students to import an image or graphic and text from the Internet to a Word document. These skills require several steps that had not been reinforced for 4 to 5 weeks at the time of the posttest. These students could have forgotten these steps due to their disability. The fifth student to fail to meet the criteria was a student diagnosed as SED. This student had been involved in an argument earlier in the day and had spent time with the social worker due to emotional concerns related to this incident. This student had performed these tasks independently during the implementation period.

Using technology can have a positive effect on the attitudes and self-esteem of exceptional students (Schery & O'Connor, 1997; Sivin-Kachala & Bialo, 1995; Ryba et al., 1995). Each of the 12 ER students presented their PowerPoint projects to a group of educators, parents, and fellow students. This demonstrated the pride that each had concerning their work. The students used a Likert-scale rating instrument to evaluate each other during the presentations. The students had several opportunities to practice using the instrument before the actual presentations. The writer used the PowerPoint presentation that was shown to the group as an introduction to the unit as a model on which to practice. Students were comfortable with the instrument at the time of the presentations. The students scored their peers in a consistent manner. Analysis of the data showed that no student earned consistently low or consistently high scores. There was no evidence of favoritism.

The students presented their projects during the fourth of four celebrations held throughout the implementation period. Ryba et al. (1995) suggested that celebrations,

certificates of achievement, and creating bulletin boards were methods for increasing motivation and self-confidence in students concerning technology instruction. During each celebration, students were presented with certificates of accomplishment. A bulletin board was created following the completion of the word processing projects. These activities led to the positive demonstration of self-confidence by each of the students.

An increase of student self-confidence became evident after the administration of the survey Feelings of Extended Resource Students Associated with Competency in Academic Tasks following the implementation period. Each student indicated that he or she felt more competent to perform academic tasks after the technology instruction than indicated on the pre-implementation survey. In light of the fact that the survey was administered at the end of the school year, students may have been responding to the confidence gained over the course of the year. However, students made comments related to the ease of completing assignments when they were allowed to use the word processor or the multimedia application.

Another outcome of this practicum was the increase of knowledge related to the technology available through the computers at the school. The Technology Survey-Extended Resource Program (1999-2000) administered before and after the implementation period, indicated that students chose the response "I don't know" fewer times after the implementation (26) than before the implementation (177). This would indicate a feeling of confidence in the students related to word processing, multimedia, spreadsheets, and the use of the Internet.

In conclusion, the results of this practicum indicated that the majority of the students in the ER group (1999-2000) were able to demonstrate the ability to use the word processing, multimedia, and spreadsheet functions of the computers available

through the school to increase their personal and academic productivity. In addition, most of the students demonstrated the ability to use the Internet to research a topic and supplement their work with graphics and images. The students indicated an increase in their academic competence as well as their general knowledge of the software available through the computers in the school.

The writer also demonstrated the ability to schedule the students into the technology lab for the hours necessary for the group to gain the knowledge of the available technology. Through consultation with the building technology instructor and participation in the TTTI, the writer was able to develop confidence in the use of the available technology and develop units of study. These activities helped the students to increase their knowledge, their feelings of competence, and actual ability to use the available technology for academic and personal productivity.

Recommendations

The following recommendations are suggested:

1. Special education teachers should consult with the technology instructor during the first week of the school year. Scheduling is essential to successful instruction. Early consultation will help the special education teacher to understand the demands placed upon the technology instructor for time in the lab.

2. Special education teachers and instructional assistants should seek out and participate in any staff development opportunities related to technology training. The rapid changes in educational technology make it necessary for teachers to continue training in order to teach effectively.

3. Develop lessons that integrate technology into all areas of the curriculum. Language arts, science, and mathematics are subject areas that can be enhanced through

the use of the word processing, multimedia, and spreadsheet applications on the computers available through the school.

4. Develop a system of behavior management consistent with that which is used in the classroom and implement this during the time spent in the technology lab. Students with behavior problems need the consistency in all learning environments. Removal from class should be the last resort.

5. Print the steps used for each of the skills taught. Laminate these and create notebooks for the students to use throughout the year. Helping the students to solve their own problems when using technology will result in more independence and build self-confidence in the students.

6. Direct the students to turn their monitors off when directions are being given. The stimulation created by the monitor may distract students with attentional disabilities. With this stimulation removed, students will have any easier time focusing on the teacher and the demonstration related to the lesson.

7. Continue to hold celebrations and invite speakers to address the students concerning technology. Presenters of different race, sex, socio-economic background, and careers can have a significant positive effect on the students that the teacher may not elicit.

8. Continue to hold students responsible for presenting their work to groups of their peers and others. Practicing presentation skills will result in greater confidence as the students continue through their academic careers.

9. As students become skillful with the applications, allow the students to act as peer tutors to the students with less proficiency. Cooperative learning will remove the stigma of asking for help from the teacher and increase the self-esteem of the tutor.

10. As the students move on to high school, work with the high school staff to continue technology training. Strongly encourage the high school PPT to include technology training into each student's IEP so that each student will continue to receive individualized training throughout their high school years.

Dissemination

This practicum will be disseminated throughout the school district. The writer will submit this report to the building principal and special education department. The technology instructor will also receive a copy. A copy of the report will be sent to the district supervisor of student services. The director of the TTTI will also receive a copy. This practicum will be submitted to the Education Resource Information Clearinghouse (ERIC) database for publication.

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APPENDIX A

TECHNOLOGY SURVEY: EXTENDED RESOURCE PROGRAM

1999-2000

Technology Survey

Extended Resource Program 1999-2000

Please listen carefully and select the best response to each statement. Circle "I don't know", "I know a little", or "I'm an expert" next to each.

I CAN.....

1. *Start a multimedia program.* I don't know I know a little I'm an expert
2. *Name your project.* I don't know I know a little I'm an expert
3. *Import pictures, movies, and sound.* I don't know I know a little I'm an expert
4. *Record your own sounds.* I don't know I know a little I'm an expert
5. *Use a tool palette.* I don't know I know a little I'm an expert
6. *Use the paint and draw tools.* I don't know I know a little I'm an expert
7. *Open the word processing application.* I don't know I know a little I'm an expert
8. *Use the spelling/grammar check* I don't know I know a little I'm an expert
9. *Use the delete key* I don't know I know a little I'm an expert
10. *Use the copy function* I don't know I know a little I'm an expert
11. *Use the cut and paste functions* I don't know I know a little I'm an expert
12. *Import graphics into a word document* I don't know I know a little I'm an expert

13. *Use word art* I don't know I know a little I'm an expert

14 *Title your document* I don't know I know a little I'm an expert

15. *Save your document* I don't know I know a little I'm an expert

16. *Use the "save as" function* I don't know I know a little I'm an expert

17. *Use a folder to store files* I don't know I know a little I'm an expert

18. *Open the spreadsheet application* I don't know I know a little I'm an expert

19. *Enter data into a spreadsheet* I don't know I know a little I'm an expert

20. *Perform mathematical operations with the data in a spreadsheet*

I don't know I know a little I'm an expert

21. *Create a graph using data from a spreadsheet*

I don't know I know a little I'm an expert

22. *Sort data in a spreadsheet* I don't know I know a little I'm an expert

23. *Log on to the World Wide Web* I don't know I know a little I'm an expert

24. *Use a search engine to find information on the World Wide Web*

I don't know I know a little I'm an expert

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25. *Find and use a graphics library* I don't know I know a little I'm an expert

26. *Import graphics into a folder* I don't know I know a little I'm an expert

27. *Download information or programs from the World Wide Web*

I don't know I know a little I'm an expert

APPENDIX B

SURVEY: FEELINGS OF EXTENDED RESOURCE STUDENTS ASSOCIATED WITH COMPETENCY IN ACADEMIC TASKS

Feelings of Extended Resource Students Associated with

Competency in Academic Tasks

1. Are you satisfied with the way your work looks after you write a paper?
   a. Yes. I believe my papers look fine.
   b. No. I do not like the way my papers look.
   c. Sometimes. Every once in a while I write a paper that looks good.
   d. I do not write papers at all.
2. When you write papers, does your teacher have to correct most of the spelling and grammar?
   a. No. I do all of the spelling and grammar myself.
   b. Yes. I am not very good at spelling or grammar.
3. How would you describe your writing assignments at this stage of your life?
   a. Excellent. I would be satisfied to write as I do now for the rest of my life.
   b. Good. I am satisfied, but I know that I could use more instruction.
   c. Poor. I would like to make neater, better, writing assignments.
   d. I never complete writing assignments without a lot of help from my teacher.
4. How would describe your ability to complete assignments for science, social studies, etc.?
   a. I make great projects and I am always happy with the way they look.
   b. I need lots of help to complete projects.
   c. I do not like doing projects. It is too hard to make a good project.
   d. I don' even try to complete projects by myself.
5. How do your written math assignments usually turn out?
   a. My math assignments are neat and accurate.
   b. My math assignments are messy, but accurate.
   c. My math assignments are usually messy and many answers are incorrect.
   d. I do not complete my math assignments by myself.
6. If you were given an assignment that required you to write a paper and make a presentation about your work, how would you feel?
   a. Happy. I really enjoy working on papers and making presentations to my

class.

b. Scared. I do not feel comfortable working on papers or making presentations to my class.

c. Mad. I do not like having to do something that I am not good at. These teachers should not give me these assignments.

d. Sad. I really get down when I have an assignment like this.

APPENDIX C

PRETEST AND POSTTEST ITEMS:

WORD, INTERNET, POWER POINT, EXCEL

Pretest and Posttest Items: Word Processing Skills

1. Open the word processing application
2. Highlight the first sentence of the text.
3. Format the text for 12-point font and double spacing.
4. Format the text for Times New Roman font.
5. Change the font to bold.
6. Change your font to italics.
7. Underline your text.
8. Delete the first sentence.
9. Undo the delete.
10. Check the number of words in the text.
11. Cut the second sentence.
12. Paste the second sentence to the end of the text.
13. Change the background color of the document.
14. Open the Word Art application.
15. Save the document to a 3.5 floppy disc.

Pretest and Posttest Items: PowerPoint Skills

1. Open the PowerPoint application.
2. Select "open a blank presentation".
3. Select a slide.
4. Enter your name on the slide
5. Select another slide that allows you to add text and an image.
6. Enter an image from clip art into your slide.
7. Enter a few words about the image that you selected.
8. Add a color to your background.
9. Add color to your text.
10. Change the font style of your text.
11. Add a transition from slide one to slide two.
12. Add an effect to your text.
13. Add an effect to your image.
14. Add sound to your transitions and movements.
15. Save your PowerPoint slides to a 3.5 floppy disc.

Pretest and Posttest Items: Internet Use

1. Open/Log onto the Internet.
2. Search for the subject "Social Studies".
3. Search for the subject "World History".
4. Choose a Website from the options given.
5. Select a few lines of text and import to a word document.
6. Select a graphic and import it to a word document.
7. Print from a Website.

Pretest and Posttest Items: Excel Skills

1. Place the following numbers in column A: 75, 87, 90, 65, 85, 78, 98, 69, 79, 86
2. Find the sum of the numbers in column A.
3. Copy the numbers in column A and Paste these into column C.
4. Find the average of the numbers in column C.
5. Create the following table in the Excel spreadsheet:

Student	Number of Boxes Sold
Abe	10
Bill	12
Cal	12
Don	13
Ellen	14
Flo	15
Ginny	11
Hank	1
Irene	16
Jay	4

6. Create a column graph from the data in the table.

APPENDIX D

LESSON PLANS

Lesson Plan: Session One

Objectives:

1. Students will open the word processing application from the desktop using the window commands.
2. Students will practice typing using the word processing application.
3. Students will save their text on a 3.5 floppy disc.
4. Students will give their text a title.
5. Students will retrieve text from a 3.5 floppy disc file.

Procedure:

The teacher will demonstrate the procedure necessary to open the word processing application using the projected image of a computer screen. The teacher will repeat the process and monitor the students as they follow the steps to open the word processing application. The teacher will direct the students to use the keyboard to type a pre-scripted paragraph. The teacher will demonstrate the use of the tab, shift, and space bar, where necessary. The teacher will monitor the students as they type the pre-scripted paragraph. After the students have demonstrated the ability to type using the keyboard, the teacher will demonstrate the procedure for inserting a 3.5 floppy disc and saving a word document to the disc creating their own title for the file. The teacher will monitor the students as they follow the procedure to save text to a 3.5 floppy disc. The teacher will demonstrate the procedure for retrieving a file from the 3.5 floppy disc file. The teacher will monitor the students as they follow the procedure to retrieve a file from the

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3.5 floppy disc drive. The teacher will direct the students to complete the typing as necessary. The teacher will conclude the lesson by demonstrating the process in reverse, beginning with saving the text on a 3.5 floppy disc, closing the word processing application, reopening the word processing application, and opening the file from the 3.5 floppy disc (A: drive). The teacher will monitor the students as they follow the procedures. The teacher will direct the students to save their text to the A: drive using the procedure demonstrated.

Materials: Pre-scripted paragraph of approximately 25 words and copies for each student, 3.5 floppy discs for each student

Steps to open the word processing application:

1. Using the mouse, left-click on the start button located on the lower left corner of the screen.
2. Using the mouse, slide the arrow up to the word "Programs" located on the top of the selections.
3. Using the mouse, slide the arrow to the right and down to the *Microsoft Word* application, indicated by the bright blue "W", a pressing the left click on the mouse.

Steps to save text using a 3.5 floppy disc:

1. Place a 3.5 floppy disc into the A: drive of the computer, being sure the metal disc is facing down and the sliding protector is facing into the computer.
2. Using the mouse, slide the arrow to the "File" button located on the upper left side of the screen and left-click.
3. Using the mouse, slide the arrow down to the "Save" function and left-click.
4. A window will appear. Using the mouse, slide the arrow to the white rectangle

until it touches the upside down , black, triangle and left-click.

5. Using the mouse, slide down to the "3 ½ Floppy (A:)" and left –click.

6. Using the mouse, slide the arrow down to the white rectangle titled "File Name" and left-click.

7. On the keyboard, find the "Delete" key and press it once.

8. Type in a title for your text.

9. Using the mouse, slide the arrow up and to the left until it hits the word "Save", then left-click on the "Save" button.

10. Wait for the green light on the A: drive to stop before you continue. This light indicates that the computer is saving the information.

11. Using the mouse, slide the arrow to the upper, right, corner of the screen until you touch the "X" and left-click. This will bring you back to the desk top screen.

Lesson Plan: Session Two

Objectives:

1. The students will use the spelling and grammar check function to edit a pre-scripted document.
2. The students will use two methods to highlight text.
3. The students will use the bold, italics, and underline functions.

Procedure:

The teacher will use the projector to review the procedure to open the word processing application and retrieve a document from the A: drive (see lesson plan #1). The teacher will monitor the students as they open the A: drive. The teacher will direct the students to open the pre-scripted file titled "Good morning." The teacher will use the projector to demonstrate the procedure to edit text using the spelling and grammar check function. The teacher will direct the students to edit the pre-scripted document using the spelling and grammar as he demonstrates on the projected image. The teacher will complete the spelling and grammar check explaining the difference between the "red" (spelling) errors and the "green" (grammar) errors. The teacher will point out the explanation section to the students and demonstrate how to select a change or select "ignore" for each item. The teacher will demonstrate the procedure for leaving the spelling and grammar check function to return to the text.

The teacher will demonstrate the procedure for highlighting text by using the mouse and left-hand click-and-drag method. The teacher will direct the students to

highlight the first sentence of the text using the click-and-drag method. The teacher will monitor the students as they practice the click-and-drag method of highlighting. The teacher will demonstrate the "insert/shift" method of highlighting text. The teacher will direct the students to highlight the entire first paragraph using the "insert/shift" method. The teacher will monitor the students as they practice the "insert/shift" method to highlight the first paragraph.

The teacher will demonstrate the procedure for using the bold, italics, and underline functions. The teacher will direct the students to make the first word of the text bold. The teacher will direct the students to make the second word of the text italics. The teacher will direct the students to underline the entire third sentence of the text. The teacher will monitor the students as they practice these procedures, reminding students to highlight before they try to use the function.

The teacher will demonstrate the procedure to delete and recover text. The teacher will direct the students to delete the last sentence of the pre-scripted text. The teacher will monitor the students as they practice this procedure. The teacher will direct the students to recover the last sentence and monitor the students as they practice this skill. The teacher will direct the students to practice the two methods of highlighting and using the bold, italics, and underline functions. The teacher will monitor and assist individuals as they practice these skills.

Materials: Teacher-made pre-scripted text that includes several spelling and grammar errors, Copies of the pre-scripted text on each student's 3.5 floppy discs, projection device

Steps for using the spelling/grammar check:

1. Open the document that you want to edit.
2. Using the mouse, slide up to the word "Tools" and left-click.
3. Slide the arrow down to the first item, "Spelling and Grammar," and left-click.
4. Explanations of the errors found will be given on the box above the text box. Use the mouse to select "Ignore" or "Change" according to the suggestion given.
5. In the case of multiple suggestions, use the arrow to scroll down the choices until you have found the correct word or correction. Left-click on that choice, then select "Change."
6. Continue to edit the text until the window "Spelling and Grammar check is complete" appears. Left-click on "OK."

Steps for highlighting text using the "click and drag" method:

1. Using the mouse, slide the insertion point to the word, sentence, or paragraph that you want to highlight.
2. Left-click before the first letter of that text and hold the click down with your index finger.
3. Slide (drag) the flashing cursor using the mouse until you reach the end of the word, sentence, or paragraph that you want highlighted and lift your finger off of the mouse. That text is now ready for your modifications i.e. bold, italics, underline, delete.

Steps for highlighting using the "insert/shift" method:

1. Using the mouse, place the insertion point in front of the words, sentences, or paragraphs that you want to highlight.
2. Left-click once.
3. Move the insertion point to the end of the words, sentences, or paragraphs that you want highlighted.
4. Press the shift key on your keyboard (second row from the bottom, far left or right) and left click once. The words, sentences, or paragraphs are now ready for your modifications.

Steps for using the bold, italics, or underline functions:

1. Highlight the words, sentences, or paragraphs the you want to make bold, italicized, or underlined.
2. Using the mouse, slide the arrow up to the capital letter **"B"** for bold, *"I"* for italics, or "U" for underline. Left-click on the function that you want to use to modify your text.
3. If you want to use different modifications for different words etc., you must highlight these words etc. separately.
4. You may use the three modifications on the same words etc. if you choose by clicking on more than one of the keys while your text is highlighted.

Steps for deleting and recovering text:

1. Highlight the words, sentences, or paragraphs that you want to delete.

2. Press the delete key on your keyboard located to the left and above the four direction arrows. Your text will disappear.

3. To recover text that has been deleted, or for that matter to undo any modification done to your text, use the mouse to move the arrow to the blue arrow that is curling backward to the left. It is located above the bold **B**.

4. Click on that "Undo" button to retrieve deleted text, or to "Undo" any modification that has been reconsidered.

Lesson Plan: Session Three

Objectives:

1. The students will use the cut and paste features to edit text.
2. The students will use the copy function to create a duplicate sample of their text.
3. The students will change the size of the font in their text.
4. The students will change the line spacing of their text.

Procedure:

The teacher will review the steps to highlighting using the "click and drag" and the "insert/shift" methods. The teacher will review the steps to delete and recover text. The teacher will review the steps to make text bold, italicized, and underlined. The teacher will review the process of editing text using the spelling and grammar check (see lesson plan #2).

The teacher will demonstrate the cut and paste functions using the projector and a pre-scripted text. The teacher will direct the students to cut the first sentence of the text and paste it to the end of the text. The teacher will monitor the students as they practice this skill. The teacher will demonstrate the use of the "Select All" feature. The teacher will demonstrate the procedure for copying text and creating a duplicate sample. The teacher will direct the students to use the "Select All" command and make a copy of their text. The teacher will direct the students to place the duplicate copy of the text under the original. The teacher will monitor the students as they practice these skills.

The teacher will demonstrate the use of the "Format" function on the toolbar to change the size or style of the font. The teacher will direct the students to change the size of the font in their text to 12-point. The teacher will monitor the students as they complete this task. The teacher will direct the students to change the style of the font to "Arial". The

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teacher will monitor the students as they complete this task. The teacher will demonstrate the process for changing the line spacing of their text. The teacher will direct the students to change the line spacing of their text to "Double Spacing". The teacher will monitor the students as they complete this task. The teacher will review the procedures used in this lesson. The teacher will direct the students to practice these skills independently. The teacher will monitor and assist individuals as they practice these skills.

Materials: Pre-scripted text in 8-point font, Times New Roman style, and single spaced on a 3.5 floppy disc, copies of the text on each of the student's 3.5 floppy discs, projection device

Steps for using the "Cut" and "Paste" functions:

1. Highlight the word, sentence, or paragraph that you want to cut.
2. Using the mouse, slide the arrow up to the word "Edit" above the document title.
3. Left-click, then slide down to the word "Cut." The highlighted text will disappear but is still available to be "pasted" somewhere else.
4. Choose where you want to "paste" the text that you have "cut." Using the mouse, slide the insertion point to the place where you want to "paste" the text. Left-click and the cursor will begin flashing.
5. Using the mouse, slide the arrow to the word "Edit" and left-click once.
6. Slide the arrow down to the word "Paste" and left-click once. Your text is now placed in the text where you left the flashing cursor.

Steps for using the "Copy" function for the entire text:

1. Using the mouse, slide the arrow up to the word "Edit" above the document title and left-click once.
2. Slide the arrow down to the words "Select All" and left-click once. All of the text will become highlighted.
3. Slide the arrow up to the word "Copy" and left-click once. Your text is now copied and is ready to be duplicated to another place on the document or to another file.
4. Return the arrow to your text and slide the insertion point to the end of the last word of your text. Left-click once.
5. Using your enter key (large key on the left side of your keyboard), place the insertion point down several spaces.
6. Return to the "Edit" command and left-click once.
7. Slide the arrow down to the word "Paste" and left click once. Your text will appear as a duplicate to the original text above.

Steps for Formatting Font and Line Spacing:

1. Using the mouse, slide the arrow up to the "Edit" command above the document title and left-click once.
2. Slide the arrow down to the words "Select All" and left-click once. All of the text will be highlighted.
3. Slide the arrow to the right and up to the "Format" command and left-click once.
4. Slide the arrow down to the word "Font" and left-click once.

5. Slide the arrow to the right to the "size" box and select 12.

6. Slide the arrow to the left to the "font" box and select "Times New Roman."

7. Slide the arrow down to the "OK" on the bottom and left-click once.

8. Slide the arrow back to the "Format" command above the text title and left-click once.

9. Slide the arrow down to the word "Paragraph" and left-click once.

10. Slide the arrow down to the "Line Spacing" box and select "Double."

11. Slide the arrow down to the "OK" box and left-click once. Your text will be double spaced, in Times New Roman font, 12-point.

Lesson Plan: Session Four

Objectives:

1. The students will use the Word Art function of the word processing application.
2. The students will create graphics using the Word Art function and manipulate these using the mouse.
3. The students will save the graphics created with the Word Art function onto their 3.5 floppy disc.

Procedure:

Using the projection device, the teacher will open the Word Art function of the word processing application. The teacher will direct the students to open the Word Art function on their computers. The teacher will select a style from the options given in the Word Art menu and direct the students to choose a style of their choice. The teacher will demonstrate the procedure to enter text into the Word Art screen and insert this into their "Word" document. The teacher will direct the students to use the Word Art function to write their names and enter this into their "Word" document. The teacher will monitor and assist individuals as they practice this skill. The teacher will demonstrate the procedure for manipulating the Word Art text by using the mouse. The teacher will direct the students to manipulate their Word Art text by using the mouse. The teacher will monitor and assist individuals as they practice this skill. The teacher will demonstrate the procedure to insert the Word Art text onto a "Word" document. The teacher will monitor and assist individuals as they practice this skill. The teacher will demonstrate the procedure for saving the Word Art image to a 3.5 floppy disc. The teacher will monitor and assist individuals as they practice this skill. The teacher will direct the students to practice using the Word Art feature. The teacher will monitor and

assist individuals as they practice using the Word Art feature.

Materials: Each student should have their 3.5 floppy discs from previous lessons. projection device

Steps for opening and creating text with Word Art:

1. Open the "Word" application (see lesson #1).
2. Using the mouse, slide the arrow to the "lazy A" icon on the tool bar and left-click once. The "lazy A" is a blue, upper case "A" that is slanted to the left and shadowed. The menu of Word Art styles will appear.
3. Select a style by sliding the arrow to the box containing the style that you desire and left-click once. Slide the arrow down to the "OK" and left-click once. A text box with the words "Your Text Here" will appear.
4. As you begin typing your text, the message will disappear and your text will appear in black. Do not worry, this will change to your selected style when you insert to a Word document.
5. To insert your text to a Word document, slide the arrow down to the "OK" and left-click once. Your text will appear on your Word document in the style that you chose.

Steps to manipulate Word Art text in a Word document:

1. Your Word Art text will appear on your document surrounded by a box and small squares placed in the corners and at the midpoint of each side. To move the entire text, place the arrow inside the box and hold down the left-click button. Slide the mouse left, right, up, or down and the entire text will move to the location that

you have selected. Release the left-click button.

2. If you desire to make the text taller, slide the arrow to the square located at the midpoint of the top line of the box. Hold down the left-click button and slide the mouse up until the text is as tall as you desire. Release the left-click button.

3. If you desire to make the text taller and longer, follow the same procedure using the square in any of the corners.

4. Each of the squares will be the starting point for you manipulations. Experiment with each to produce different effects.

5. If you desire to change the font, you may return to the Word Art text box by placing the arrow in the center of the box and left-clicking twice. Slide the arrow to the box under the word "size" and left-click once on the upside down, black triangle. This will reveal a list of font sizes. Select the size that you desire and left-click once on the "OK." This will change the size of your text automatically.

Lesson Plan: Session Five

Objectives:

1. The students will demonstrate the ability to gain access to the Internet.
2. The students will demonstrate the ability to use a search engine to access possible sources of information on a given subject.
3. The students will save a graphic from an Internet site onto a 3.5 floppy disc.
4. The students will insert a graphic from a 3.5 floppy disc to a Word document.

Procedure:

The instructor will demonstrate the process for gaining access to the Internet using the Netscape Navigator icon on the desktop display. The instructor will direct the students to log on to the Internet. The instructor will monitor the students as they log on to the Internet.

The instructor will explain that the computer will automatically bring the user to the "Yahooligans" home page. The instructor will explain that this is called a "search engine" and is capable of connecting the user with a great many Internet "sites" where information can be accessed. The instructor will demonstrate how to use a "link" to gain access to an educational site. The instructor will select the "School Bell" link. The instructor will direct the students to "double-click" on the link titled "School Bell." The instructor will monitor the students as they access the "School Bell" site.

The instructor will explain the variety of curriculum areas available and then "double-click" on the "Social Studies" link. The instructor will direct the students to access the "Social Studies" link. The instructor will monitor the students as they access the "Social Studies" site.

The instructor will demonstrate the process of limiting the search to "World

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History" by "double-clicking" on the "World History" link. While in the "World History" site, the instructor will further limit the search by "double-clicking" on the "Ancient Egypt" link. The instructor will direct the students to access the "Ancient Egypt" site using the links provided. The instructor will monitor the students as they access the "Ancient Egypt" site.

The instructor will demonstrate how to scroll down the selections to find a desirable site and to "double-click" to gain access to any given site. The instructor will direct the students to scroll down through the choices and select a site that interests them. The instructor will monitor the students as they access their selected site on ancient Egypt.

The instructor will demonstrate the procedure to download an image from the Internet and save the image to a 3.5 floppy disk. The instructor will direct the students to choose any graphic on their site and save the image to a 3.5 floppy disc. The instructor will monitor the students as they save an image to their discs.

Materials: 3.5 floppy discs for each student, projection device

Steps for Accessing the Internet:

1. Using the mouse, select the icon on the desktop for "Internet Explorer" and left-click twice. The homepage of the Internet site selected by the district will appear. For the district in which this practicum was implemented, "Yahooligans.com" is the default home page.

Steps for using a search engine to access an Internet site

1. A search engine will provide "links" (words printed in blue) to any number of pre-established Internet sites. Using the mouse, select the area that you want to

explore and double-click on that link. Search engines such as "Yahooligans" are made specifically for children, so there will be a site for "education-related" sites.

2. Once the page for the education links appears, select the curriculum area that you are interested in searching and double-click on that link.

3. Websites that are related to the curriculum area that you selected will appear. To scroll down the page, slide the arrow to the right until you are in the far right margin. This is called the "scroll bar." Here you will see a down arrow (upside down, black triangle). Using the mouse, hold the left-click button down and the page will scroll down. To scroll up, slide the arrow to the up arrow located on the top of the "scroll bar."

4. When you find a description of a site that you are interested in exploring, place the arrow on that link and double-click. The website will appear momentarily.

Steps for downloading an image from the Internet to a 3.5 floppy disc:

1. The website that you have selected will most likely have images of people, maps, or other interesting items. Select the image that you want to download by using the mouse and moving the arrow to the image and right click once. A menu will appear. Using the mouse, select the "save picture as" option by using the left-click button.

2. A window will appear titled "Save Picture." Using the mouse slide the arrow to the rectangular box below the title. This will most likely show the words "My Documents." Slide the arrow to the left and onto the down arrow and left-click once. Another window will appear.

3. Slide the arrow down to the 3 1/2 floppy (A) and left click once. A new window

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will appear titled 3 ½ Floppy (A). Before you click on the "save" button, you may want to change the title of the image to something that you will recognize. To do this, slide the arrow down to the bottom of the window and left on the existing title. Type the title that you desire in it's place. Slide the arrow up to the "save" button and left-click once. The image is saved on your 3.5 floppy disc.

Steps for inserting an image from a 3.5 floppy disc to a Word document:

1. Open the Word application (see lesson plan #1).
2. Using the mouse, slide the arrow to the "Insert" command and left-click once. A menu will appear. Select the "Picture" command and left-click once.
3. On the menu, select "From File" and left-click once. A window will appear. Slide the arrow to the rectangular box at the top and left click on the left side of the box. A menu will appear. Select "3 ½ Floppy (A).
4. The files on the 3.5 floppy disc will appear. Select the file that contains your image and left click once. Slide the arrow to the "Insert" button and left-click once. Your image will appear on your Word document.
5. To manipulate the image on your Word document, slide the arrow to the image and hold the left-click button down while you move the image to the place you desire. You may enlarge the image by placing the arrow on one of the small boxes along the edge of the image frame, holding the left-click button and dragging the edge to the size desired. Be aware that this will result in a less-defined image.

Lesson Plan: Session Six

Objectives:

1. The students will choose a subject or character from their history curriculum as a subject for their report.
2. The students will use the Internet to research the subject of their reports.
3. The students will print research material from the Internet to use as research material for their history reports.

Procedure:

The teacher will review the appropriate subject matter with each grade-level to use as a subject for their reports. The teacher will direct the students to choose a subject from the history curriculum that has been covered to date. The teacher will provide the students with guidelines for the content of their reports.

The teacher will review the procedure for using the Internet for research. The teacher will direct the students to use the Internet to find information on the subject that each student has chosen. The teacher will monitor and assist students as they search the Internet for research material for their reports. The teacher will demonstrate the procedure for printing from web pages. The teacher will suggest that the students use the library or materials from the classroom to supplement their research. The teacher will work with the students to select information from their research to use in their reports.

Materials: Computers with Internet access, printer, projection device

Steps for printing from a web page

1. Select a web page from the options given through the search engine. Using the mouse, slide the arrow up to the "File" command and left-click once. Slide the arrow down to "Print" and left-click once. The print window will appear.

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2. Slide the arrow down to the "OK" and left-click once. This will print the entire page that is displayed on the screen.

Lesson Plan: Sessions Seven –Twelve

Objectives:

1. Students will select a topic from their social studies curriculum to use as a basis for a report of at least 250 words.
2. Students will use the Internet to research subject matter for their reports.
3. Students will use the word processing application to create their reports.
4. Students will use the spelling/grammar check to edit their reports.
5. Students will insert images from the Internet into their reports.
6. Students will use the Word Art feature to create covers for their reports.
7. Students will include at least one reference in their report.

Procedure:

The teacher will prepare a set of guidelines for the students to follow when creating their reports. The teacher will distribute these guidelines and explain the guidelines to the students before beginning the Internet search of their chosen topics. The teacher will direct the students to log on to the Internet to find information related to the topic that each student has selected. The teacher will monitor and assist each student as they search the Internet for information. The teacher will direct the students to print any information that they feel will help them create their reports. The teacher will direct the students to save any images that they feel will supplement their reports as they search the Internet. The teacher will monitor and assist the students as they save images to their 3.5 floppy discs.

The teacher will assist students as they select text for their reports from the material that they have printed from the Internet. The teacher will monitor and assist students as they begint to create their reports using the word processing application on the

computers. The teacher will direct the students to check the word count by using the "Tools" menu and selecting "Word Count." The teacher will direct the students to ignore any red or green underlines on their documents. The teacher will explain that these marks are the computer's way of remembering spelling and/or grammar errors and that they will be corrected later.

The teacher will direct the students to edit their reports using the spelling/grammer check feature of the word processing application, once they have completed their reports. The teacher will monitor and assist individuals as the edit their reports. Once the students have edited the text in their reports, the teacher will direct the students to use the Word Art function to create a cover page for their reports. The cover page will include a title, their name, and an image that has been saved on their 3.5 floppy discs. The teacher will monitor and assist the students as they create their cover pages.

The teacher will direct the students to create a references page. The teacher will direct the students to title the references page and center the title "References." The teacher will direct the students to include the web address, the author (if applicable), date, and title of the website in each reference entry. The teacher will monitor and assist the students as they create their reference pages. The teacher will direct the students to save all of their work on their 3.5 floppy discs at the end of each session. The teacher will direct the students to print their reports when they have been approved by the teacher.

Lesson Plan: Session Thirteen

Objectives:

1. The students will open the Power Point application for a blank presentation.
2. The students will select the default slide offering a title box and a text box.
3. The students will enter the title "All About Me" in the title box.
4. The students will enter the following heading in the text box: General Facts, My Favorite Things, and My Future.
5. The students will insert new slides using the default slide offering a title and a text box.
6. The students will enter text in the new slides corresponding to the headings indicated in the first slide.
7. The students will save their Power Point slides on their 3.5 floppy discs.

Procedure:

The teacher will use a prepared Power Point presentation to demonstrate the different capabilities of the Power Point application. The teacher will talk through each slide explaining the different modifications to each slide. The teacher will explain that each of the students will create a presentation similar to the example just shown.

The teacher will use the pre-scripted Power Point pretest items to determine the abilities of the students. The teacher will direct the students to perform each of the 15 items on the pre-test. The teacher will monitor each student and indicate if each student has or has not completed the direction on a chart.

The teacher will direct the students to close the Power Point application and select "no" when asked if they want to save their work. The teacher will demomnstrate the procedure for opening a blank presentation and direct the students to do so on their

computers. The teacher will direct the students to look at the first slide in the options given in the Power Point opening window, pointing out the blue border around the slide. The teacher will direct the students to use the mouse to select each of the available slides, pointing out that the blue border will appear around any slide that is selected. The teacher will direct the students to select the first selection and click "ok."

The teacher will demonstrate the procedure for entering text into the title box by entering the text "All About Me." The teacher will direct the students to enter the same title into their title box. The teacher will monitor the students as they enter the title into the title box. The teacher will demonstrate the procedure for entering text into the text box. The teacher will enter the following headings into the text box: General Facts, My Favorite Things, and My Future. The teacher will direct the students to enter the same text into their textbox. The teacher will monitor and assist each student as they enter the text into their box.

The teacher will demonstrate the procedure for inserting a new slide. The teacher will point out that the second slide in the option menu has been selected automatically. The teacher will click the "ok" botton. The teacher will direct the students to insert a new slide into their presentations. The teacher will enter the title "General Facts" into the title box and direct the students to do the same in their presentations. The teacher will monitor and assist each student as they enter the title. The teacher will enter general facts about himself in the text box and direct the students to do the same about themselves. The teacher will allow approximately 3-minutes for this task. The teacher will monitor and assist students as they enter text into their slides. The teacher will follow the same procedure for the next two slides, using the titles "My Favorite Things" and "My Future" and appropriate text entries for each.

The teacher will demonstrate the procedure for saving the slides onto a 3.5 floppy disc. The teacher will direct the students to save their work onto a 3.5 floppy disc. The teacher will monitor and assist each student as they save their work.

Materials: Teacher-made Power Point presentation, teacher-made pretest and assessment chart, 3.5 floppy discs for each student, projection device

Steps for Opening the Power Point Application

1. Using the mouse, click on the "Start" button. After the window appears, slide the arrow up to the word "Programs" and wait for the next window to appear. Slide the arrow over to the next window and slide down to the words "Power Point." Select the Power Point application by using the left-click button on your mouse.
2. When the Power Point opening window appears, use your mouse to select "Blank Presenetation" by left-clicking in the circle next to the words "Blank Presentation" then clicking on the "OK" button. The slide menu will appear.

Steps for Selecting a Power Point Slide

1. The slide menu will automatically select the first slide as your default choice when you open a blank presentation. You will notice a blue border around this slide. Using the mouse, click on each of the other choices. You will notice that the blue border appears around the slide that you have clicked upon.
2. Slide the arrow back to the first selection and left-click. Slide the arrow over to the "ok" button and left-click. The slide will appear on the monitor, ready for you to enter text.

Steps for Entering Text into Power Point Slides

1. The Power Point slides direct you where to add text for the title and the text box.

Using the mouse, click on the words in the box that you wish to enter text. The text will disappear and a flashing cursor will appear. Enter the text that you desire, Power Point will automatically adjust the text to the box that you are working in at the time.

2. When you enter text into a slide, you may notice that it goes over the given area. To adjust the size, highlight the text and change he font size until text fits into the box.

3. You may choose to change the style, size, or color of your font. You may do this by using the Format button and adjusting the text as you would in Word. Remember to highlight the text that you wish to manipulate.

Lesson Plan: Session Fourteen

Objectives:

1. The students will manipulate the font size on Power Point slides.
2. The students will manipulate the font on Power Point slides.
3. The students will manipulate the font color on Power Point slides.
4. The students will format the background on Power Point slides.

Procedure:

The teacher will demonstrate the procedure for opening the Power Point application and opening an existing presentation. The teacher will direct the students to open the "All About Me" file. The teacher will demonstrate the procedure for changing the font size in the title box and text box of a Power Point slide. The teacher will direct the students to change the font size in the title box and the text box in their Power Point slides. The teacher will monitor and assist the students as they change the font size on their Power Point slides.

The teacher will demonstrate the procedure for changing the font on Power Point slides. The teacher will direct the students to change the font style of the title and text on their Power Point slides. The teacher will monitor and assist the students as they change the font style on their Power Point slides.

The teacher will demonstrate the procedure for changing the color of the font on Power Point slides. The teacher will direct the students to change the color of the font on their Power Point slides. The teacher will monitor and assist the students as they change the color of the text on their Power Point slides.

The teacher will demonstrate the procedure for formatting the background of Power Point slides. The teacher will direct the students to change the color or format of

the background on their Power Point slides. The teacher will monitor and assist the students as they change the background of their Power Point slides.

Materials: 3.5 Floppy discs with student Power Point files, projection device

Steps for Changing the Size of the Font in Power Point Slides

1. Using the mouse, slide the arrow to the title and left-click once. The title box will appear. Highlight the text inside the title box by the click-and-drag method or the insert/shift method described in Lesson Two. Use this same procedure to work with the text in the text box.
2. Using the mouse, slide the arrow up to the Format button on the tool bar above the Power Point slide and left-click once. Slide the arrow down to the word Font and left-click once. The Font window will appear.
3. Slide the arrow down to the Size window. Use the black arrows next to the size numbers to change the font size. Select the size by clicking on the number in the window. The number will turn blue. The higher the number, the larger your font will become. Click the "OK" button to view the changes on your Power Point slide. Modify by repeating these steps.

Steps for Changing the Style of the Font in Power Point Slides

1. Follow the directions given in step one above to select the font in the title or text box.
2. Using the mouse, slide the arrow up to the Format button as described in step 2 above. Select Font as described in step two above.
3. Slide the arrow to the Font window. Use the black arrows next to the font names to scroll up or down through the font selections. Select the font by clicking on the

name in the window. The name will become blue. Click on the "OK" button to view the font in the title or text box of your Power Point slide. Modify the font by repeating these steps.

Steps for Changing the Color of the Font in Power Point Slides

1. Follow the procedure described in steps one and two above.
2. Slide the arrow to the Color window. Use the black arrow next to the color of the existing font. Usually this is black. Click on the arrow and several samples will appear as well as an area for More Colors.
3. Select one of the examples given by clicking on the sample or select More Colors below the samples. A spectrum of possible colors will appear. You may select any of these colors by clicking on the color of your choice. Click the "OK" button. Your choice will appear on top of the previous color in the Font window. Click the "OK" button to view your font on your Power Point slide. To modify, repeat these steps.

Steps for Modifying the Background of Power Point Slides

1. Using the mouse, slide the arrow up to the Format button on the tool bar above the Power Point slide and left-click once. Slide the arrow down to the word "Background" and left-click once. The background window will appear.
2. To change the color of your background, slide the arrow down to the "Background Fill" selection box and use the black arrow to select your color. You may choose one of the default colors that are given, or click on the words "More Colors" to view the spectrum. Choose your background color as directed in step three above.

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3. When you see the background window, there will be two choices available to you. If you select "Apply", your color will only be applied to the slide that you are working on at the time. If you select "Apply to All", each slide in your presentation will have the same color for its background.

4. You may also choose to use a "Fill Effect" to modify your background. To do so, follow the steps to select a color indicated above. Instead of choosing "More Colors", select "Fill Effects". A window will appear with four tabs titled Gradient, Texture, Pattern, and Picture.

5. To view the color scheme for a gradient selection, you must select a color from the choices given in the color selection area (the previous window). If you do not, the gradient will appear as shades of white and gray. Experiment with the colors and various patterns available. Again, to apply the "Fill Effects" to your slide, you must choose "Apply" or "Apply to All" in the Background window.

6. Textures will allow you to scroll through a variety of backgrounds that appear to be different textured material such as marble, burlap, paper etc. Select a texture by placing the arrow on the sample and clicking once. A preview will appear in the small window. Click "OK' to view the texture as a background for your slide.

7. Patterns can also be used as backgrounds. Again, colors must be selected for the foreground and the background of your selected pattern. Color selection may be done in the "Patterns" window. Once you have selected your color scheme, select the pattern that you desire. A sample will appear in the small box in the window. Click "OK" to apply the pattern to your slide.

8. The Picture background will only be relevant if you have pictures filed in your

"C" drive or on a floppy disc. I will not describe the process for using this feature, since it is beyond the scope of the lesson.

Lesson Plan: Session Fifteen

Objectives:

1. The students will view their Power Point slides using the "slide sorter view" function.
2. The students will add effects to the slides in their Power Point presentations.
3. The students will add transitions between the slides in their Power Point presentations.

Procedure:

The teacher will open the Power Point presentation titled "All About Me" and direct the students to open their presentations from their 3.5 floppy discs. The teacher will demonstrate the procedure for viewing the entire presentation using the "slide sorter view" function in the Power Point tool bar. The teacher will direct the students to use the "slide sorter view" function to view their slides. The teacher will monitor and assist the students as they open the "slide sorter view" function to view their presentations. The teacher will demonstrate the procedure for selecting individual slides for modification while using the "slide sorter view" function. The teacher will direct the students to choose a slide from their presentation using the "slide sorter view" function. The teacher will direct the students to make a change in the font or background of the slide that they selected. The teacher will monitor and assist individuals as they select and modify a slide using the "slide sorter view" function.

The teacher will direct the students to use the "slide sorter view" function to view all of their slides. The teacher will direct the students to double-click on their first slide. The teacher will demonstrate the procedure for opening the "custom animation" function

of the Power Point application. The teacher will demonstrate the procedure for adding timing and effects to the first slide. The teacher will direct the students to add timing and effects to their slide. The teacher will monitor and assist individuals as they add timing and effects to their slides.

The teacher will demonstrate the procedure for adding transitions between Power Point slides. The teacher will direct the students to add a transition to the first slide. The teacher will monitor and assist individuals as they add a transition to their Power Point slide. The teacher will direct the students to continue to add effects and transitions to the Power Point presentations. The teacher will monitor and assist the students as they add effects and transitions to their Power Point presentations.

Materials: student 3.5 floppy discs, projection device

Steps for Using the Slide Sorter View

1. Open the Power Point presentation as directed in the previous lessons.
2. Using the mouse, slide the arrow down to the left corner above the "Start" button. You will see five small icons. Place the arrow over the four boxes. The title "Slide Sorter View" will appear. Left-click once and the "Slide Sorter View" will appear.
3. Using the mouse, slide the arrow to any of the slides in your presentation and double-click. The slide will appear in full-screen, ready for any modifications.
4. To repeat this process for the other slides in your presentation, click on the "Slide Sorter View" icon and select another slide to modify.
5. When modifying slides, remember that you are going to present your slide show to an audience. The font color should contrast with the background so that the

text and image can easily be seen and read by the audience.

Steps for Adding Effects to Power Point Slides

1. After opening the Power Point presentation, use the mouse to slide the arrow up to the words "Slide Show" on the tool bar above the Power Point slide and left-click. Slide the arrow down to the words "Custom Animation" and left-click. The Custom Animation window will appear.
2. Slide the arrow down to the "Timing" tab. This window should be open by default. If not, click on the "Timing" tab. Depending on the type of slide you have created, one or more items will appear in the "Slide Objects without Animation" box with the numbers 1, 2, 3, ... following each item. The numbers indicate what part of the slide was created first, second, etc. Select the title, text, or object that you want to animate with an effect by left clicking on that name.
3. Slide the arrow over to the box titled "Start Animation" and click in the circle next to "animate. The title, text, or object will appear in the "Animation Order" box above the "Slide Objects without Animation" box. The item that you choose will also appear in the "Preview" screen with a border around it.
4. Slide the arrow down to the "Effects" tab and left-click. In the area titled "Entry Animation and Sound", use the black arrow to scroll through the options in the window that has the words "No Effect." Choose an effect by clicking on one of the options. Follow the same procedure to add sound to the effect that you have selected. Do not worry if you are unsure of your selections, anything you do can be previewed by clicking on the "Preview" button and changed by repeating this procedure.

5. Repeat this procedure for each of the items in the "Slide Objects without Animation" box under the "Timing" tab. Remember, you may preview any part of your slide animation and change it until you are pleased with the result. The "Preview" button will show a preview of each section as you add effects, so you can get a good feel for the entire slide after the effects have been entered.

Steps for Adding Transitions to Power Point Slides

1. After opening the Power Point presentation, use the mouse to slide the arrow up to the words "Slide Show" on the tool bar above the Power Point slide and left-click. Slide the arrow down to the words "Slide Transition" and left-click. The "Slide Transition" window will appear.
2. Slide the arrow down to the box titled "Effects" and use the black arrow to scroll through the options in the transition menu. Choose the transition that you want to apply to your slide by clicking on the title in the menu. Your choice will appear in the window.
3. Beneath the "Effect" box you will see an area titled "Advance." Click in the box next to the words "On mouse click." This will allow you to control the transition with a click of the mouse.
4. You may choose to add sound to your transitions by selecting a sound from the sound menu in the "Transitions" window. Use the black arrow to scroll through the options in the sound menu and select by clicking on the sound. Your selection will appear in the sound window.
5. To apply the transitions to your slides, click on the "Apply" button. If you want the same transition on every slide of your presentation, click on the "Apply to

All" button. Remember, as with the "Effects", you may modify any of your transitions by repeating this procedure.

Lesson Plan: Sessions Sixteen- Twenty-two

Objectives:

1. The students will select a topic to base their Power Point presentations upon from their social studies curriculum.
2. The students will use the Internet to research their selected topics and find images to use in their Power Point presentations.
3. The students will create Power Point presentations with at least five slides and three images.
4. The students will add effects to each of their Power Point slides.
5. The students will add transitions to each of their Power Point slides.

Procedure:

The teacher will assign each grade level a set of guidelines to follow when creating their Power Point presentations. The teacher will direct the students to use the Internet to find information and images to use in their Power Point presentations. The teacher will monitor and assist individuals as they search the Internet for information and images.

The teacher will monitor and assist individuals as they create their Power Point presentations. The teacher will direct the students to use different fonts and backgrounds to make their presentations look "spectacular." The teacher will suggest that the students use colors that contrast when changing the font and background of their presentations. The teacher will assist the students as they create text from their research for their Power Point slides, suggesting that "bullets" are better suited for this medium than full sentences.

The teacher will monitor and assist the students as they insert images into their Power Point slides. The teacher will remind the students that images can be moved and manipulated by using the left-click-and drag or by using the corner boxes on the image frames. The teacher will remind the students that by using boxes other than the corners on the image frame, their images will lose clarity.

The teacher will monitor and assist individuals as they add effects to their Power Point slides. The teacher will suggest effects that are pleasing to the intended audience and suggest that students avoid redundant sounds or visual effects. The teacher will give the same advice to the students as they add transitions to their slides.

The teacher will direct the students to practice presenting their Power Point presentations using the "View Show" feature. The teacher will direct the students to make any modifications to their presentations after they view their shows. The teacher will monitor and assist the students as they view their presentations and make modifications.

Materials: Each student will keep a folder with their individual research and notes to use when creating their Power Point presentations, teacher-made guidelines to assist the 6th, 7th, and 8th grade groups in completing their presentations

Steps for Viewing a Slide Show

1. Open the Power Point program and the file that you would like to view.
2. Using the mouse, slide the arrow up to the tool bar and over to the words "Slide Show." Left-click once.
3. Select the "View Show" option from the menu.
4. Use the left-click to begin your show and continue to left-click for each of the

slides and the effects to appear on your screen.

5. After viewing your show, you may choose to modify any of the slides by following the steps listed in the previous lessons.

Lesson Plan: Session Twenty-three

Objectives:

1. The students will open the Excel program of Office 97.
2. The students will enter data in the horizontal rows of an Excel spreadsheet.
3. The students will enter data into the vertical columns of an Excel spreadsheet.

Procedure:

The teacher will create a worksheet with names, scores and dates for five fictional students. The teacher will distribute the worksheets to the group. The teacher will review the units studied to date (Word 97 and Power Point). The teacher will introduce the Excel program by describing a spreadsheet and the uses for spreadsheets. The teacher will open the Excel program and direct the students to open the program. The teacher will monitor and assist the students as they open the Excel program.

The teacher will click on cell A1 of the Excel spreadsheet and direct the students to do the same at their stations. The teacher will point out the A1 that appears in the "Name Box." The teacher will click in cell B4 and direct the students to do the same at their stations. The teacher will point out the B4 that appears in the "Name Box." The teacher will explain the names associated with each cell, beginning with the capital letter of the column and ending with the number of the row. The teacher will direct the students to select several various cells and observe the names that appear in the "Name Box."

The teacher will enter the word "Name" in cell A1 and direct the students to do the same. The teacher will monitor and assist the students as they enter the word "Name" in cell A1. The teacher will enter the dates from the worksheet in cells B1 through F1.

The teacher will monitor and assist the students as they enter the dates in cells B1 through F1. The teacher will enter the names from the worksheet in cells A2 through A6. The teacher will direct the students to enter the names from the worksheet into cells A2 through A6. The teacher will monitor and assist the students as they enter the names from the worksheet into cells A2 through A6. The teacher will enter the scores for each student under the first date in cells B2 through B6 and direct the students to do the same at their stations. The teacher will monitor and assist the students as they enter the scores into cells B2 through B6.

The teacher will demonstrate the procedure for highlighting the data in an Excel spreadsheet. The teacher will explain that before any of the data can be manipulated the data must be highlighted. The teacher will highlight the data in row one and direct the students to do the same at their stations. The teacher will monitor and assist the students as they highlight the data in row one of their spreadsheets. The teacher will demonstrate the center and bold applied the data in the first row of the spreadsheet. The teacher will direct the students to use the center and bold tools on the data in the first row of the spreadsheet. The teacher will monitor and assist the students as they apply the bold and center tool to the data in the first row of their spreadsheets. The teacher will follow the same procedure for the data in the first column of the spreadsheet. The teacher will direct the students to highlight the scores in cells B2 through B6. The teacher will apply the center tool to these scores and direct the students to do the same at their stations. The teacher will monitor and assist the students as they highlight and center the data in cells B2 through B6. The teacher will direct the students to save the spreadsheet on their 3.5 floppy discs.

Materials: teacher-made worksheets with fictitious names, dates, and scores, student floppy discs, projection device

Steps for opening the Excel program

1. Using the mouse, left-click on the "Start" button. Slide the arrow up to the word "Programs" and left-click. Slide the arrow to the words "Microsoft Excel" and left-click. A spreadsheet will appear with cell A1 highlighted.
2. When opening an existing spreadsheet, left-click on the word "File" and select the file on which you would like to work.

Steps for Entering Data into the Spreadsheet Cells

1. Using the four arrows on the keyboard, select the cell that you want to place data. The cell that you select will be highlighted and its name will appear in the "Name Box" located directly above cell A1.
2. Type the data into the cell using the keyboard.
3. Use the four arrows to move from cell to cell as opposed to using the mouse. It is much quicker.
4. If you notice that there are mistakes in any of the cells, left-click on the cell containing the mistake. The data will appear in the formula bar located directly above the spreadsheet. Make any modifications in the formula bar and they will be reflected in the cell.

Steps for Highlighting Columns, Rows, and Cells in the Spreadsheet

1. To highlight an entire row, use the mouse and place the arrow on the number of the row that you want to highlight. Left-click once and the entire row will be highlighted.

2. To highlight an entire column, use the mouse and place the arrow on the letter of the column that you want to highlight. Left-click once and the entire column will be highlighted.
3. To highlight cells in a spreadsheet, use the click-and-drag method. Using the mouse, place the arrow on the cell that you wish to highlight, left-click and hold the button down, and drag over the data in that cell as well as any other cells that you want to highlight.
4. Remove your finger from the left-click button once you have selected the cells that you want highlighted.
5. Once columns, rows, and cells have been highlighted, you may manipulate the data using any of the tools that you learned about when teaching Word 97. Bold, underline, italics, format the font, change the font size or color etc.

Lesson Plan: Session Twenty-four

Objectives:

1. The students will find the sum of a list of numbers.
2. The students will find the average of a list of numbers.

Procedure:

The teacher will prepare a worksheet that includes lists of whole numbers, dollar amounts, decimal fractions, and mixed decimal fractions for the students to copy into their spreadsheets. The teacher will review the procedures for entering data into columns and rows into an Excel spreadsheet. The teacher will distribute the prepared worksheets to the group and inform them that they will be adding these numbers and finding the average of these lists of numbers. The teacher will demonstrate the procedure for entering a list of number from the worksheet into a column on the Excel spreadsheet. The teacher will demonstrate the procedure for finding a sum for a list of numbers. The teacher will direct the students to enter a list of numbers from the worksheet into column B of the spreadsheet. The teacher will monitor and assist individuals as they enter the list into their spreadsheets.

The teacher will demonstrate the procedure for copying a list of numbers from one column to another column. The teacher will demonstrate the procedure for obtaining an average of a list of numbers in an Excel spreadsheet. The teacher will direct the students to obtain the average of the list of numbers. The teacher will monitor and assist the students as they obtain the average of the list of numbers.

The teacher will direct the students to find the sum and the average of each list of numbers on the prepared worksheet. The teacher will monitor and assist individuals as

they find the sum and average of the lists on the worksheet.

Steps for Finding a Sum of a List of Numbers in an Excel Spreadsheet

1. Once a list of numbers has been entered into a column, use the down arrow to highlight the cell next cell in the column. For example, if your list is contained in cells A1 through A5, highlight cell A6.
2. Using the mouse, slide the arrow up to the summation symbol (Σ) and left-click once. A broken-line border will appear around your list and the range of the cells will appear in the highlighted cell, i.e. =SUM (A1:A6).
3. Left-click on the summation symbol and the sum will appear in the highlighted cell below the original list.

Obtaining an Average of a List of Numbers in an Excel Spreadsheet

1. Once a list of numbers has been entered into a column, use the down arrow to highlight the next cell down in the column.
2. Using the mouse, slide the arrow up to the Function ($f*$) symbol and left-click once. A menu will appear.
3. Select the word AVERAGE from the menu and left-click once. The word AVERAGE and an explanation of the function will appear below the menus. Click OK.
4. A window will appear with the range of the cells in your column as well as the list of numbers in brackets. This window will also show the average as calculated by Excel. Click OK. The average will appear in the highlighted cell below the list.

Lesson Plan: Session Twenty-five

Objectives:

1. The students will copy data from one column to another in an Excel spreadsheet.
2. The students will center data in columns of an Excel spreadsheet.
3. The students will create a table of text and numbers in an Excel spreadsheet.

Procedure:

The teacher will review the procedure for finding a sum and an average of a list of numbers in an Excel spreadsheet by directing the students to enter a list of any 10 numbers into column A. The teacher will enter 10 numbers into column A and demonstrate the procedure for finding a sum. The teacher will direct the students to do the same with the numbers in their spreadsheets. The teacher will monitor and assist individuals as they find the sum for a list of numbers. The teacher will demonstrate the procedure for copying a list of numbers in a spreadsheet column and pasting that list into another column in the same spreadsheet. The teacher will direct the students to copy the list of 10 numbers from column A and paste that list into column C. The teacher will monitor and assist individuals as they copy and paste the list of numbers from column A to column C. The teacher will demonstrate the procedure for finding an average of a list of numbers in an Excel spreadsheet. The teacher will direct the students to find the average of the list in column C in their spreadsheets. The teacher will monitor and assist the students as they find the average of the list in column C of their spreadsheets.

The teacher will demonstrate the procedure for centering the numbers in columns A and C. The teacher will direct the students to center the numbers in column A and C in their spreadsheets. The teacher will monitor and assist the students as they center the numbers in columns A and C.

The teacher will distribute a prepared worksheet containing several tables of data

(mathematics, social studies, or science texts or workbooks may have these available. I suggest that you check for published tables before you prepare your own). The teacher will select a table from the worksheet and demonstrate the procedure for entering the data from the table into the Excel spreadsheet. The teacher will use CAPS LOCK, **bold,** centering, or font changes to copy the table as close as possible. The teacher will direct the students to copy a table from the worksheet onto their Excel spreadsheets. The teacher will monitor and assist the students as they copy the table onto their Excel spreadsheet. The teacher will direct the students to save the tables onto their 3.5 floppy discs.

Materials: worksheet with several tables of data, student 3.5 floppy discs, projection device

Steps for Copying and Pasting Data from Column to another in an Excel Spreadsheet

1. Once data has been entered into a column, highlight the cells that you want to copy by left-clicking on the first cell and drag down to the last cell in the column. The first cell will not turn black or seem to be highlighted. Do not worry. It is included with the highlighted data.
2. Using the mouse, slide the arrow up to the word Edit on the toolbar and left-click once. The menu will appear. Slide the arrow down to the word "Copy" and left-click once. A broken-line border will appear around the cells that you selected. This data is now copied and ready to be pasted to another location.
3. Using the mouse, select the first cell in column C and highlight by left-clicking once. Slide the arrow up to the word Edit on the toolbar and left-click once. The

menu will appear. Slide the arrow down to the word "Paste" and left-click once. The data in column A will be copied into the cells in column C. You may follow this procedure any number of times to make multiple lists.

Steps for Centering Data in an Excel Spreadsheet

1. Once data has been entered into a column, highlight the data as directed in step one above.
2. Using the mouse, slide the arrow up to the Center tab on the toolbar next to the **B**, ***I*, and U** tabs. The Center tab is the second from the left. Left-click once. The data in the highlighted cells will center within the cells."

Steps for Creating a Table in an Excel Spreadsheet

1. Enter data into the columns and rows as it appears in the table that you are copying. If the titles are in CAPS, press the Caps Lock key on your keyboard located above the Shift key on the left-hand. If the data is centered, then follow the steps for centering above, to change the font, use the Format tab on the toolbar and follow the steps for changing the font in the previous lessons in Power Point.
2. The borders around the cells in your spreadsheet will not appear unless you format the program to show these lines. Highlight the entire table using the "Click-and-Drag" method. Only highlight the cells that contain data.
3. Using the mouse, slide the arrow up to the toolbar containing the **B**, ***I*, and U**. The icon for "Outside Borders" is a square with fine lines crossing through its center. Place the arrow on the black arrow next to this icon and left-click once. A selection of borders will appear. Select the "All Borders" icon (black square with solid black lines crossing the center). Left-click once. The borders around your

table will appear.

4. If data seems to carry over from one cell to another due to the length of the words or numbers, you can increase the width of the cells. To do this, use the mouse and slide the arrow up to the column headings (A, B, C…) and place the arrow (which has turned into a cross) on the line between the letters of the cell that you wish to modify. The cross will turn into a set of parallel lines with arrows pointing left and right. This will only occur if you have the cursor in the proper position to modify the cell width. Left-click and drag the border to the right until the word or number is contained within the cell. Centering the data in the column will adjust the data to create a better look for you table.

Lesson Plan: Session Twenty-six

Objectives:

1. The students will create a graph using the data in an Excel spreadsheet.

Procedure:

The teacher will direct the students to open the Excel program and open the table that they created in session twenty-five. The teacher will demonstrate the procedure for creating a graph from the data in an Excel spreadsheet. The teacher will direct the students to create a column graph from the data in their Excel spreadsheets. The teacher will monitor and assist the students as they create a graph from the data in their Excel spreadsheets.

The teacher will direct the students to create another table from the worksheet and to make another graph. The teacher will monitor and assist the students as they create tables and graphs using the Excel spreadsheet.

Materials: worksheets with tables, student 3.5 floppy discs, projection device

Steps for Creating Graphs from Data in an Excel Spreadsheet

1. Once the table has been completed, use the mouse to highlight the cells containing data.
2. Using the mouse, slide the arrow up to the "Chart Wizard" icon and left-click once. The "Chart Wizard" icon is on the same toolbar as the summation (Σ) and function (f^*) icons. It looks like a multi-colored column graph.
3. The "Chart Wizard" window will open to the first of four pages. Select the "Column Graph" from the choices available and left-click once. The "Column Graph" may be the default choice. If so, click "Next" on the bottom of the

window.

4. The next window will show you the column graph and give you the choice of "Rows" or "Columns." Select the choice that gives you the data that you want included in your graph. Once you have made your selection, click "Next" on the bottom of the window.

5. The next window will require you to enter a title and label for the x-axis (horizontal) and the y-axis (vertical). To enter titles, click in the box below each item. When you have entered the titles, click "Next" on the bottom of the window.

6. The final step is to select whether you want the graph to appear on the spreadsheet or on a separate page. To place the graph on a new sheet, select "As New Sheet." To place the graph on the spreadsheet, select "As Object In." Once you have made your selection, click on "Finish" at the bottom of the window.

7. Your graph may appear in an area that is impractical, for instance, on top of your table. To move a graph, use the mouse and left-click on the white area of the graph. Hold the left-click and drag the graph to the desired area. Release the left-click.

8. To manipulate the graph or the border, left-click on the desired area and use the black squares to increase/decrease the length or width. It may be necessary to increase the length of the graph to include all of the data on the x-or y-axis. Use trial and error to discover the proper size of the graph.

9. It may be necessary to decrease the size of the font in order to include all of the data and titles. To do this, double-click on the font located on the x-or y-axis. A

window will appear. You may format the axis using any of the tabs available in this window. To format the font, click on the "Font" tab and select the size from the selections offered in the size menu. After you have made your selection, click "OK."

APPENDIX E

PEER EVALUATION INSTRUMENT

PEER EVALUATION OF POWER POINT PRESENTATIONS

Number of Slides	1	2	3	4	5 or more
	Poor				Very Good
Use of Color	1	2	3	4	5
Use of Images	1	2	3	4	5
Effects	1	2	3	4	5
Sound	1	2	3	4	5

Overall

_____ I thought this presentation was very good.

_____ I thought this presentation was good.

_____ I thought this presentation was fair.

_____ I thought this presentation was not very good.

_____ I thought this presentation was poor.